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ABSTRACT

This study examined ability grouping of students in relationship to the amount of time they received from teachers, the effects of grouping on students' self concept, and grouping students according to their social behavior as perceived by the teacher. Information was obtained on the criteria teachers used for placing students in various groups, with an estimate of the percentage of instructional time allocated to the groups, teachers' perception of students' personal behavior, students' self concept, use of instructional time, and students' academic progress. A difference was found in students' ability group level and the amount of instructional time received from the teacher. Low-ability students received more instructional time. Social behavior characteristics influenced the placement of students in groups. No difference was found between students' group placement and their self concept scores. Instructional time alloted to a student had no effect on social behavior or self concept. Students in the higher ability groups spent more time working independently than those in lower groups. No relationship was found between the amount of time students were on task and affiliation with the teacher. Implications for practitioners and future researchers are suggested. (JD)

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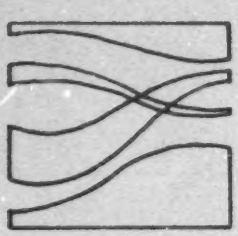

Technical Report No. 554

The Allocation of Instructional Time to Students in Elementary Schools that Seek to Individualize Insruction

by Shirley Broaden

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Technical Report No. 554

THE ALLOCATION OF INSTRUCTIONAL TIME TO STUDENTS IN ELEMENTARY SCHOOLS THAT SEEK TO INDIVIDUALIZE INSTRUCTION

by

Shirley Mae Broaden

Report from the Project on
Studies of Administration and Organization for Instruction

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- providing assistance to educators which helps transfer the outcomes of research and development to improved practice in local schools and teacher education institutions

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DEDICATION

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Abstract

THE ALLOCATION OF INSTRUCTIONAL TIME TO STUDENTS IN ELEMENTARY SCHOOLS THAT SEEK TO INDIVIDUALIZE INSTRUCTION

Shirley Mae Broaden

Under the Supervision of Professor Richard A. Rossmiller

The purposes of this study were threefold. First, the study investigated academic ability grouping of students in relationship to the amount of time they received from teachers in schools which seek to individualize instruction. Second, the study examined the effects of academic ability grouping on students' self-concept. Third, the study probed teachers' perceptions of students' social behavior to determine its effect on student academic ability group placement. The results of previous research in these areas provided the theoretical framework for the study.

Data on 48 third grade students and four teachers were collected in four Wisconsin elementary schools. The study utilized six instruments to gather data and information concerning students, teachers, and grouping procedures. Specifically, the instruments identified the criteria which teachers used for placing students in various reading groups, with an estimate of the percentage of instructional time allocated to various groups; information concerning the teachers' perception of their students' personal behavior; background information from students' personal files; self-concept

scores which measured students' affective behavior; information concerning teachers' and students' use of classroom instructional time; and students' level of academic progress.

The four major hypotheses and four ancillary questions were analyzed statistically using comparison of means, multiple regression, and product-moment correlations. The probability level for all tests of significance was set at .05.

The major conclusions derived from the analysis of the data were:

1. A statistically significant difference existed between students' academic ability group level and the amount of instructional time students received from teachers in a small-group and in a combination of one-to-one and small-group arrangement with low-ability students receiving more of the teacher's time.

2. Nine of the 15 student social behavior characteristics were found to be statistically significant when related to the placement of students in academic ability groups. Students in the higher ability group tended to be rated more favorably on these characteristics.

3. No statistically significant difference was found between students' academic group placement and students' self-concept scores.

4. A regression of students' social characteristics and students' self-concept scores against teacher instructional time allocation in a small group and in a combination of one-to-one and

small-group instruction revealed that no statistically significant relationship existed. The only variable related to the dependent variable at a statistically significant level was the student behavior descriptor "is neat."

5. A statistically significant relationship was found between the amount of time students spent working independently and their academic ability level with students in the higher ability group spending more time working independently.

6. No statistically significant relationship was found between the amount of time students were off-task and students' social maturity level.

7. No relationship was found between the amount of time students were on-task and students' affiliation with the teacher.

8. No statistically significant relationship was found between the amount of time students were involved in process behavior and students' academic ability level.

Based on the findings, a number of implications for practitioners and future researchers were suggested.

APPROVED: Richard A. Rossmiller

DATE: July 23, 1986

CHAPTER I

INTRODUCTION

The question of whether children should be grouped for instruction according to their academic ability has been debated for over a century and has been the focus of national attention since the 1920s. Arguments for and against ability grouping have been a dominant issue in the literature concerning grouping students in the elementary school. Some educators take the position that children should be grouped homogeneously because of their varying levels of ability and achievement; others argue that ability grouping perpetuates racial and social class segregation. One of the early writers, Keliher (1930), concluded that homogeneous grouping is not desirable in our elementary schools.

Homogeneous grouping can be identified at least as early as 1867 when the Harris plan which rapidly promoted bright pupils through the elementary grades on the basis of how well teachers thought pupils would succeed was initiated in St. Louis. This was followed by a similar plan in Elizabeth, New Jersey, which moved bright elementary children rapidly through the school program. The Cambridge, Massachusetts, plan of 1891 divided pupils into groups, allowing the brightest groups to complete grades 4 to 9 in four years while the slowest groups were permitted to complete grades 4 to 9 in seven or eight years (Goldberg, et al., 1966).

Many of the studies of the effects of academic ability grouping of children have used the results of IQ tests as the criterion for grouping. The effects of academic ability grouping on a child's social development has been a focus of the arguments for and against grouping, but most of the experimental studies have been concerned primarily with academic achievement and have excluded the effects of ability grouping on children's total social development.

Findley and Bryan (1975) asserted:

> Ability grouping was adopted first by inference in the 1920s; discredited by failure to produce hoped for results in the 1930s and 1940s; then revived in the 1950s when all the children of all the people tended to go on through high school and the term "dropout" was coined to describe failure to continue (p. 6).

Now, in 1980, questions concerning ability grouping remain despite the findings of earlier studies and past heated debates.

Statement of the Problem

The purpose of this study was to examine academic ability grouping of students in relationship to the amount of time they received from teachers in schools which seek to individualize instruction, effects which academic ability grouping has on students' self-concept, and academic ability grouping of students according to their social behavior as perceived by the teachers.

The following questions were addressed in this study:

1. What is the relationship between the academic ability levels of students and the amount of teacher time allocated to them?
2. What is the relationship between the teacher's perception of students' social characteristics and students' academic ability group?
3. What is the relationship between students' self-concept and students' academic ability group?

Review of the Literature

Theoretical guidelines from prior research findings concerned with ability grouping as it relates to student achievement, self-concept and teacher allocation of instructional time suggested the hypotheses for this study. Findings and conclusions from a number of previous studies are summarized and described in the following review of literature.

Ability Grouping

Research has indicated that strongly held attitudes both for and against grouping children according to their academic ability are widespread among educators. Those in favor of ability grouping argue that grouping students of similar ability solves the problem of meeting the needs of all children by reducing the range of ability in the groups to be taught (National Education Association [NEA], 1965). Educators who oppose ability grouping, as summarized

by Bridge et al. (1979), argue that grouping children according to ability perpetuates social class and racial segregation. This type of isolation hinders social mobility among lower-class children. Johnson (1970) stated:

> There is growing evidence that under the conditions with which ability grouping is usually used it affects attitudes toward other students in ways that are detrimental to a democratic, pluralistic society. There are indications that ability grouping results in an intellectual snobbery where students designated as high ability avoid associating with students designated as low ability. There is evidence the racial and class biases of ability grouping promotes racial and class prejudice. Finally, there have been instances where ability grouping has been openly adopted as a means of segregating students along racial lines within the school (pp. 187-188).

A nationwide teacher opinion poll survey conducted by NEA (1960) reported that 57 percent of the elementary teachers favored ability grouping and 33 percent of them disapproved of ability grouping. A later NEA survey (1967) found that in 27 percent of all school districts students in elementary schools were grouped according to ability; 43 percent grouped some of the children in their districts; random grouping of pupils was reported by 25 percent of the districts; and reports were not received from 5 percent of the districts. Gore and Koury (1965) found in a nationwide survey involving grades K-3 that approximately 21 percent of the kindergarten students, 45 percent of the first grade students, 49 percent of the second grade students, and 49 percent of the third grade students were grouped homogeneously.

During the decade of the 1970s, schools nationwide have practiced ability grouping in one form or another. A national survey conducted by Findley and Bryan (1971) indicated that approximately 77 percent of schools in the United States used some form of ability grouping. More than 20 percent of the schools used grouping at all levels, with grouping used more often at the secondary school level. Test scores were used as a method for placing students into various groups in 80 percent of the schools, and in 13 percent of these schools test scores were used as the sole criterion for grouping.

Placing students in academic ability groups may result from applying one or more of a combination of criteria, for example IQ test results, standardized achievement test scores, teacher perception of student ability, previous grades (Goldberg, 1966), students' social and/or emotional maturity levels, and students' oral reading performance. Albro and Haller (1972) have suggested that most school districts request teacher recommendations for placing students in various "tracks" in order to avoid total reliance on objective test measures.

Based on the previously mentioned criteria, an extensive array of instructional materials and flexible teaching methods are needed to help students experience academic success within the various "tracks." However, research studies about ability grouping are quite vague concerning ways in which teachers are expected

to differentiate the instruction presented to students at different ability levels. As stated by Heathers (1967),

> Most often the reports infer that teachers will vary one or more of the following: learning tasks, including the use of enrichment activities or advanced materials with gifted students; instructional methods--drill with slow groups, projects with abler groups; and the pace of advancement, with slow groups normally being allowed more time with a unit of work (p. 15).

Albro (1971) investigated the criteria teachers used to place similarly achieving students into different ability tracks. Twenty-three sixth grade teachers from five school districts in central New York State comprised this sample. Near the end of the school year, teachers placed students in high, middle, or low English ability tracks. Students were ranked within their particular tracks according to scores from the Language portion of the Iowa Tests of Basic Skills. The results showed an overlapping of scores between adjacent groups in almost every classroom. The three bottom-ranking students of the high group and the three bottom-ranking students of the adjacent lower group were defined as borderline students. Twelve teachers compared six students who were borderline between the top and middle groups and eleven teachers compared six students who were borderline between the middle and lower groups, using any student attribute from the Discriminate Perception Repertory Test that they perceived to be important. Percepts under the broad category Cooperation and Conformity accounted for 42 percent of all percepts mentioned. The subcategory Good Work Habits was used by

78 percent of the teachers. Teachers recommended borderline students with good work habits to be placed in higher tracks more often than similarly achieving students with poor work habits. The category of General Ability was used by 65 percent of the teachers, and accounted for 9 percent of all percepts; the category Motivation was used by 70 percent of the teachers. Although only 26 percent of the teachers used percepts classified as attendance items, this category displayed the highest discriminating power.

Procedures used to assign students to ability groups are not very reliable (Johnson, 1970). Yates (1966) reported from an investigation of studies concerned with pupil placement in secondary school courses (primarily in Britain and West Germany) that 10 percent of the pupils were misclassified. Lower-class children are most often placed in lower-ability tracks, regardless of their actual ability (Johnson, 1970).

Daniels (1961) observed that once a student is placed in a low group, he usually remains in that group. It also has been noted that students who are placed in high-ability groups prefer to remain in high-ability groups (Luchins & Luchins, 1948).

Many large-scale studies which used total student populations have reported that ability grouping has no consistent effect on student achievement. This conclusion was asserted by Goldberg et al. (1966) and Wilcox (1961) where no differentiation of curriculum for students of varying ability was attempted, and in studies

by Borg (1966) and Drews (1963), which attempted to develop curriculum differentiated for ability levels. Borg also found that students' study methods were superior where heterogeneous grouping was practiced, while students' subject matter achievement tended to be greater where ability grouping was used.

A comprehensive investigation conducted by Goldberg et al. (1966) in 45 New York City elementary schools, which grouped students according to various ranges of intellectual ability, found that achievement gain was greater when classes consisted of students with a broad range of ability. Narrow range ability classes showed little positive change in academic achievement.

Studies conducted prior to 1955, as summarized by Goodlad (1960), tended to favor ability grouping for both fast and slow learners, with slow learners benefiting more from grouping than fast learners. Daniels (1961), on the other hand, reported that ability grouping retarded the educational progress of slow learners, lowered that of the average students, and reduced the fast learning students' attainment levels. Borg (1966) and Heathers (1967) found that rapid learners showed gains when ability grouping was used, but these gains were offset by the losses sustained by slower learners.

Tuckman and Bierman (1971) studied the effects of upward placement of 805 Black junior and senior high students who had been perceived as medium and low achievers on the basis of their

performance in school. Four hundred twenty-one (421) of these students were arbitrarily assigned to medium- and high-ability groups, while the remaining 384 students were retained in their assigned group. Standardized achievement tests were given at the end of the school year to both experimental and control groups. Those students who were placed in higher groups scored higher on the test. Fifty-four (54) percent of the students who had been placed in a higher group were recommended by their teachers for continued placement in a higher group for the following school year, while only 1 percent of students from the control group was recommended for placement in a higher group for the following school year.

Coleman et al. (1966) suggested that in heterogeneous schools, children who come from underprivileged backgrounds may profit very much from being exposed to children whose background and values tend to enhance school achievement.

Recent studies concerning increased academic achievement for high-ability students have produced mixed results. Borg (1966), Douglas (1964), and Heathers (1967) concluded that high-ability students increased their attainment when placed in ability groups, while Abrahamson (1959) and Goldberg et al. (1966) found the opposite to be true.

"Caste systems" that are developed in classrooms as a result of grouping may engender or perpetuate elitism (Good & Brophy, 1973).

To illustrate this concept further, Rist (1970) followed a group of students from kindergarten through second grade. During the first week of school, the kindergarten teacher developed a certain pattern which included calling on the same students to be classroom helpers. After a week and a half of school, the teacher had assigned children to permanent seats. At table one, which was closest to the teacher, were placed children who were highly verbal, dressed in clean apparel, had combed hair, were free of body odors, and approached the teacher with considerable ease. Children placed at tables two and three were poorly dressed (with the exception of one child); some were physically unkempt, shy, and did not communicate well with the teacher. Rist observed that children sitting at table one received more attention from the teacher than did the children at tables two and three, who received more criticism from the teacher. Children at tables two and three treated each other with hostility and received hostile treatment from their table one peers.

Rist followed 18 of these 30 children during their entire first grade year. All students that had been placed at table one in kindergarten were placed at table A (high group). Tables two and three kindergarten children were placed at table B (middle group) except for one who had been placed at table C (low group). Most of the children at table C were repeating first grade.

Labeling of children was initiated by the second grade teacher. The high group was labeled "Tigers," the middle group

was labeled "Cardinals," and the low group was labeled "Clowns." The same patterns from the previous years were followed. Groups remained rigid for the entire three years of school. Rist (1970) expressed it this way:

> No matter how well a child in the lower reading groups might have read, he was destined to remain in the same reading group. This is, in a sense, another manifestation of the self-fulfilling prophecy in that a "slow learner" had no option but to continue to be a slow learner, regardless of performance or potential (p. 435).

Research has suggested that many teachers prefer not to teach low-ability students. A poll conducted by NEA (1968) indicated that teachers prefer to teach average- or high-ability classes which are homogeneously grouped. The question which NEA used to poll teachers was: What types of pupils would you prefer to teach, so far as ability is concerned? As can be seen in Table 1.1, elementary and secondary teachers prefer to teach students of average or high ability.

Interested in the effects which ability grouping has on students' social and personal development, Eash (1961) reported from a review of the research on ability grouping that children of low and average ability suffered from the deprivation of intellectual stimulation they experienced when they were separated from brighter children. Dockrell (1964) also supported the view that ability grouping retards or has a detrimental effect on slow

TABLE 1.1

TEACHERS' PREFERENCE FOR TEACHING CHILDREN OF VARYING ACHIEVEMENT LEVELS*

	Elementary	Secondary	Total
High	18.4%	34.6%	26.0%
Average	44.7	38.9	42.1
Low	4.3	1.9	3.
Mixed	21.3	15.2	18
No Preference	11.3	9.4	1

*From: National Education Association. Ability Grouping in Practice. Washington, D.C.: NEA Research Division, Research Summary 1961-S3, 1968, 15.

learners. Explanations such as teacher expectations and "self-fulfilling prophecies" which might account for this behavior were advanced by Rosenthal and Jacobson (1967).

Despite evidence indicated by research that ability grouping per se is likely to affect student achievement in a positive sense (Good & Brophy, 1973), this practice continues. Johnson (1970) expressed it in this manner:

> In conclusion, there seems to be no evidence that ability grouping, under the conditions with which it has been commonly used, is effective in raising the achievement of any group of students. With more recent advances in classroom technology such as teaching machines, which aid the teacher in individualizing instruction within the classroom, there seems to be no rationale for its use (p. 191).

Relationship Between Ability Grouping and Students' Self-Concept

The child's ability to achieve, to adjust to everyday school life, to get along with his peers, and to learn to cope relates back to the child's concept of him- or herself (Peck et al., 1977). "A person's self-concept is the picture that he has of himself--who he is and what he can do" (Gartrell, 1975, p. 13). The child's self-concept is strongly influenced by his school environment. In fact, the school is the second most powerful influence on how a child feels about himself; the family occupies first place in this respect (Tanner & Lingren, 1971). The responsibility of helping children develop a healthy self-concept lies in the hands of educators as well as parents (O'Connor, 1978). Garwood (1976) asserted that success and failure in schools may be attributed to teachers. Therefore, the teacher has a significant effect on the child's perception of himself (Combs, et al., 1969; Curtis & Altman, 1977).

Coppersmith and Silverman (1969) suggested that when teachers change their specific behavior, students' self-concepts also change. Curtis and Altman (1977) conducted a study among 755 grade four, five, and six elementary school children and their respective teachers to see if the teachers' perceptions of self related to the students' perceptions of self. Instruments used in this study were the Tennessee Self-Concept Scale, the Coppersmith Self-Esteem Inventory, and Davidson and Lang's Check List of Trait Names. The researchers found that teachers who evaluated their

students highly on self-concept also evaluated themselves highly on self-concept, while the reverse was found to be true among teachers who did not rate themselves highly. Students showed an accurate perception of how teachers viewed them. Students who thought that their teachers evaluated them highly had a high evaluation of themselves, while the reverse was true among students who thought that their teachers evaluated them lowly. The researchers concluded that the individuality of a child coupled with the teacher's self-concept influences a teacher's reaction to the child.

The teacher is a very important person in the life of elementary school children. They tend to believe and accept what teachers have to say about them (Hamachek, 1972). Research has supported the concept that one's opinion of oneself and academic achievement are highly related. Studies conducted by Brookover et al. (1962, 1965, 1967) indicated that pupils' performance in school is limited by their attitude and that pupils' ability to learn may not be the most important factor in achievement. Bledsoe (1967) also supported the fact that academic achievement is related to self-concept.

Research has indicated that students are aware of their teachers' poor opinions of them and seem to receive lower grades as a consequence (Davidson & Lang, 1960; Goldblatt & Tyson, 1962). Lewis (1971) stated that students who are low achievers receive less favorable behavior ratings from teachers than high-achieving

students. Borg (1966) reported that the self-concept of both slow and average pupils seems to suffer in schools where ability grouping is practiced. Grouping students according to ability promotes racial and class prejudice (Johnson, 1970); negatively affects students' attitudes toward their peers (Johnson, 1970); and interferes with the possibility of students being exposed to a broader range of ethnic and cultural differences (Eash, 1961).

Richmond and White (1971) examined the interrelationships which exist among such factors as peers, teachers, and self-regard of pupils. Their subjects were 204 fifth and sixth grade pupils with an approximately equal number of males and females, as well as economically deprived and more advantaged pupils. Economically deprived children were identified through the Poverty Index (OEO, 1970). All children were given the Self-Esteem Inventory (SEI) and 10 ratings on each child were obtained by using a semantic differential instrument (SD). Teachers rated children in six areas: Attitudes Toward The Teacher, Attitudes Toward School Work, Games and Play, Attitudes Toward Other Children, Personal Characteristics, and Physique. The researchers found that peer ratings served as the best predictor of teachers' ratings of pupils. Children viewed by teachers to have more maladjustive types of behavior were seen by their peers as being low in activity. A higher score was made by children who perceived themselves as low in social and self-acceptance on the teacher's evaluation of maladjustive behavior,

while the child scoring low in the areas of rejection by authority, self-rejection, or on the lie scale received a high maladaptive behavior as seen by their teachers. The researchers concluded:

> There is little reason to suppose that more time given to academic study, homework, or tutoring will meet the needs that each child experiences in his classroom group. These needs could be met more effectively by devoting a part of each school day to the development of adequate social and self-concept skills in children. It seems incongruous that social and self-awareness are not accorded equal time with U.S. history or the geography of Southeast Asia (Richmond & White, p. 76).

Development of healthy student self-concepts must be done as early in the child's life as possible. Children have developed all sorts of ideas about themselves before they begin school. Purkey (1970) stated:

> Children come to school for the first time with a predisposition toward achievement or underachievement. Long before the first school bell rings, many children, particularly males, are oriented toward either success or failure in school. Some children enter school with the feeling that they are helpless, unable to cope. Others enter already calibrated, and they respond carefully to classroom instructions. For still other children the opposite is true, for they have never been encouraged to be careful, accurate, neat, or even honest (pp. 36-37).

Many research studies indicated that when teachers set high expectation levels for their students, the prophecy is actually fulfilled (Carter, 1971; Evertson & Brophy, 1974; Good, 1970; Richardson, 1968; Rosenthal & Jacobson, 1966). Carter (1971) suggested that a student's level of confidence, as well as his academic potential, seem to be affected by what his teacher expects him to do.

Peck et al. (1977) defined coping skills "as the manner in which a person approaches a task or problems" (p. 7). Research studies indicate that a child's ability to cope is related to his self-concept (Knowles, 1967). A child may develop neuroses, defenses, character defects or psychoses when the child is submerged in stress or anxiety (Kaplan, 1970).

A child's observed social behavior and characteristics play a greater role than his intellectual potential in teacher judgment of the child's ability to learn (Brown & MacDougall, 1971). Rist (1970) found that body cleanliness, hair style, type of apparel, and language style influenced teachers' perceptions of children's learning ability.

Brown and MacDougall (1971) investigated the impact of teacher consultation on the self-perceptions of elementary school children. A six-week inservice training program was conducted with 14 teachers in an elementary school setting. The two-hour sessions after school allowed teachers to observe, discuss, and analyze their behavior through the use of videotapes. Teachers discussed such topics as: (1) interdependence of affective and cognitive behavior; feelings and acquisition of subject matter; (2) peer interactions and group interactions; self-perceptions and how they are learned; (3) adult interactions with children; the effect of certain behaviors on the behavior of others; (4) the antecendents of teaching problems; effective learning climates and the locus of control;

(5) self in relation to others; systematic instruction in socialization skills; and (6) evaluation of the training sessions. In a private session, researchers, along with the teachers, critiqued a teacher's behavior. Only positive teaching behaviors were noted. The relationship of the teaching training experiences to the pupil population were examined by administering a Personal Competence Inventory (Peer Acceptance Index and Self Perceptions Index) to the students in grades 3 through 6. Teachers rated each of their pupils through the Self Perceptions Index and identified each pupil by race, socioeconomic status and sex. The researchers concluded:

1. Teachers' perceptions of pupils is influenced by how much that pupil is accepted by his peers.
2. The socioeconomic level of a child influences how teachers perceive the child.
3. The race or sex of a child does not generally influence teacher perception.
4. Teacher interaction styles influence peer perceptions.

"Teachers have been shown to have preferences for certain types of students. While not conclusive, research results provide indications that these preferences may be related to teacher-student interaction in the classroom" (Hummel-Rossi & Merrifield, 1977, p. 375). Helton (1972) suggested that teachers prefer students who are passive, who conform, and who are orderly. A study conducted by Hummel-Rossi and Merrifield (1977) implied that students who were assertive, tough minded, apprehensive, and anxious received more direct and monitored techniques from their teachers,

while bright students and students who were confident received intellectual challenges from their teachers.

Clifford and Walster (1973) found that such factors as facial attractiveness can strongly influence teachers' opinions of students which may, in turn, affect the students' level of performance. Teachers were asked to make judgments about students by viewing their photographs which had been placed on the students' report cards. Teachers portrayed a more positive attitude toward attractive children than they did toward unattractive children. This concept of facial attractiveness was further investigated by Algozzine (1977) with 80 fourth, fifth, and sixth grade children representative of below average, average, and above average ability. Positive scores, negative interactions, and neutral interactions were computed for each of the teacher-perceived attractive and unattractive children. Those children perceived by their teachers as being attractive received more positive teacher interactions (significant at .05 level) than their "unattractive" peers. Attractive girls received less negative interactions than did unattractive girls or attractive boys. However, no significant differences were found in the amount of neutral interactions among children in this sample.

Research has indicated that the expressed classroom behavior of children positively or negatively influences teachers' perceptions of these children's ability to learn. Solomon and Kendall

(1977) conducted a study in selected Alabama junior and senior high schools with 94 teachers. All teachers filled out a questionnaire describing their three most favored and their three most estranged students. The academic accomplishment of these students was also indicated. Grades ranged from A+ to F with each letter grade representing a number (A+=1) to (F=13). Results suggested that teachers favor students who are attentive, emotionally stable, respectful, like school, exhibit good manners, are obedient, are neat workers, are contemplative, are popular among their peers, and make good use of their ability. Teachers' perceptions of the academic accomplishment correlated (.73) with a student's selection as a favored versus estranged student.

Adams and Cohen (1976) evaluated the effects which children's cumulative folder information has on teacher perception of children's abilities. Results indicated that teachers' expectations differed for children based on the child's sex, attractiveness, family background, and ability.

Instructional Time Allocation

The amount of instructional time allocated to students of varying ability has been given some thought in recent years. State and local officials, teachers, students, and parents have shared in the decision making concerning how much time students spend in school (Kemmerer, 1978-79). Teachers have considerable input concerning how much time students spend in various content

areas within subjects, the amount of time devoted to academic learning, and the way in which teacher time is divided among individual students (Kemmerer, 1978-79) and groups of students (Garner, 1978; Good, 1970). Berliner (1979) reported that teachers in four fifth grade language arts creative writing classes spent .8 percent, 1 percent, 5 percent, and 6 percent of class time, respectively, on the previously mentioned skill. The same magnitude in difference of class time was reported in other content areas, as well as in the second grade math and reading classes (Berliner, 1979). Gump (1967) indicated from a study of third graders that, on the average, teachers allocated 12 percent of class time to pupil transition in and out of the classroom. Grannis (1978) concluded that 9 to 13 percent of teacher allocated class time was used for nonrelated subject matter (environmental maintenance).

Carroll's (1963) model of school learning sets time as a central variable in school learning along with the quality of instruction and the students' ability to understand the instruction. A study conducted by Wiley and Harnischfeger (1974) reported that the amount of time which students spent in school correlated positively with students' level of achievement. In a similar vein, Murnane's (1975) study of 875 Black children in 15 New Haven, Connecticut elementary schools reported that the amount of time spent in school related positively to academic achievement.

Students differ in how they use their time on task (Perkins, 1965). A study conducted by Perkins (1965) using 72 fifth grade

high-ability children who were labeled as achievers and underachievers revealed that underachievers spent more classroom time than achievers working in another academic area, engaging in nonacademic work and in a withdrawal state.

Research studies have indicated that attention is related to learning (Aspy, 1971). Lahaderne (1968) reported a positive relationship between measures of students' attention and scores on academic and intelligence tests. A study of classroom behavior in an Air Force school conducted by Morsh (1956) revealed a correlation of -.58 between achievement and student behavior indicating inattention. Siegel (1968) suggested that it "could be argued that readers are able to inhibit attention to (ignore) irrelevant stimuli more quickly and (thoroughly) than do poorer readers." Gump (1967) reported that involvement among students was greater when the size of the teacher-led group was small and when the activity was externally, rather than self, paced. The student's level of involvement may be offset by the type of task (Dunkin & Biddle, 1974) and task orientation to ongoing work (Kowatrakal, 1959).

Structuring of classroom activities is critical in student involvement. Bloom (1974) expressed it this way:

> The explanation for differences in time-on-task is . . . complex and probably includes cultural differences, the importance of school learning to the students and their parents, the way in which teachers use the time available for learning, the quality of the instruction and the extent to which students attain the prerequisites for a particular learning task (p. 687).

Good and Beckerman (1978) conducted a study of sixth graders in six primarily self-contained classrooms to discover whether pupil classroom involvement varied according to high, middle, and low achievers. Two different types of schools were used: School 1 served pupils from low, middle, and high-income homes, while School 2 served mostly pupils from working-class and lower middle-class homes. They reported:

> High achievers were more involved--spent more time on task than low achievers. Eight percent more girls than boys were described as high achievers.
>
> Pupils, on the average, appeared to be less involved during whole-class and individual activities. Pupils' involvement is highest when they are in a small group or a large group with a teacher.
>
> Pupils spend more time in making written responses than in any other activities (38 percent).
>
> Pupils spent more than half of the instructional day (51 percent) working privately.
>
> Students from School 1 were more involved in instructional activities (60-80 percent) than students from School 2.
>
> Low achievers (64 percent) are less involved than middle (73 percent) or high achievers (76 percent).

Studies conducted in the United States, as well as in other countries, indicate that some students need more time than others to master school material. Included among such studies are those by Bloom (1974) and Coleman et al. (1966).

Students are affected differently by school resources (Rossmiller & Frohreich, 1978). The quality of educational resources and their effects on student achievement have been

researched extensively (Haggart, 1979; Kiesling, 1972; Rossmiller, 1978). Various educational programs, such as those which are federally funded, have been subjected to the watchful eye of economists and researchers in educational finance. Kiesling (1972) reported from a study using disadvantaged children Title I Projects in four elementary grades that instruction by a trained specialist related positively to reading gains in the third grade. In terms of the variables constructed to measure planning and coordination, only that for "hours of planning" related to performance. Rossmiller (1978) investigated whether student achievement was affected by the amount of instructional time allocated to the student. Data concerning how teachers used their instructional time were collected from teachers in 28 IGE elementary schools. Rossmiller found that teacher time allocation variables accounted for only 44 percent of the variance in student achievement.

Thomas et al. (1978-79) are currently conducting a study on 248 fifth grade students in 31 classrooms stratified according to low, middle, and high SES levels and school resources within and among classrooms. A preliminary analysis within classrooms indicates that individual time on task relates negatively to students' SES, positively to the amount of parental assistance provided them, and positively to the amount of time spent in whole-class or large-group activities. Simultaneously, an among-classroom analysis reports that students in classes of high SES, classes with high

reading comprehension scores, and classes which spend a large amount of time in small-group or individualized instruction relate positively with the amount of time spent "on task."

The results of several research studies indicate that students of high ability have more interaction with teachers than do students of average and low ability (Garner, 1978; Good, 1970; Kranz et al., 1970; Tyo & Kranz, 1973). A recent study by Garner (1978) concluded that students of above average ability receive more teacher instructional time than students of low or average ability. This was found to increase significantly the more able students' opportunity to learn. Also, high achievers are given more opportunities to respond in class and receive more positive feedback from teachers than low achievers, according to Good (1970), Kranz et al. (1970), Rubovitz and Maehr (1971), and Medinnus and Unruh (1971). Jackson (1968) observed that teachers ignore some children in the classroom every day while praising others.

The effects of teacher expectancies upon student behavior were investigated by Kester and Letchworth (1972) with 150 seventh grade students and 23 teachers. All students were considered of average ability as defined by an IQ score from 90 to 110 on the Otis Lennon Test. Teacher-student interactions were also measured. Teachers were given data which indicated that certain average ability students were intellectually superior or "bright" (experimental group) while other students were "normal" (control group).

As can be seen from Table 1.2, teachers spent more time communicating with "bright" students than with "normal" students.

TABLE 1.2

MEANS AND STANDARD DEVIATIONS OF TOTAL AMOUNT OF TIME SPENT COMMUNICATING WITH EXPERIMENTAL AND CONTROL GROUPS*

	Observations			
	First	Second	Third	Fourth
Experimental				
N	23	23	23	23
$\bar{X}$	6.73	7.73	9.78	10.39
SD	4.63	4.29	7.93	7.00
Control				
N	23	23	23	23
$\bar{X}$	3.78	5.00	5.30	6.26
SD	3.12	3.64	3.45	4.71

*From: Kester, Scott W., & Letchworth, George A. Communication of teacher expectations and their effects on achievement and attitudes of secondary school students. The Journal of Educational Research, 1972, 66, 2.

Statement of Hypotheses

The following hypotheses were tested in this study:

H_1 There is no significant difference in the amount of time students at different academic levels receive from their teachers.

H_2 There is no linear combination of students' social characteristics and students' self-concept which can account for a significant portion of the variance in amount of time allocated to students.

H_3 There is no difference in the teacher's perception of a student's social characteristics across the ability groups in which the student is placed.

H_4 There is no difference in students' self-concept across different ability groupings.

The research questions tested in this study were analyzed as follows:

Independent Variable	H_1, H_3, H_4	Dependent Variables
1. Ability Grouping		1. Teacher Instructional Time Allocation 2. Teacher Perceptions of Students' Social Characteristics 3. Student Self-Concept

Independent Variables	H_2	Dependent Variable
1. Student Social Characteristics 2. Student Self-Concept		1. Teacher Instructional Time Allocation

Ancillary Questions

In addition to the hypotheses, answers to the following questions will be sought:

1. Is there a relationship between the amount of time students spend working independently and students' academic ability level?
2. Is there a relationship between the amount of students' off-task behavior time and the social maturity of students as measured by Self-Observation Scales (SOS)?
3. Is there a relationship between students' on-task classroom behavior and students' affiliation with their teacher as measured by Self-Observation Scales (SOS)?
4. Is there a relationship in the amount of process behavior permitted to students by their teacher and the students' academic ability level?

Definition of Terms

The following definitions are provided to assist the reader in understanding the key concepts and ideas used in the study:

1. Teacher instructional time -- actual time spent teaching students.

2. Ability grouping -- placing students in groups (e.g., low, average, or high) according to their level of academic performance or capability.
3. Flexible grouping -- regrouping of students according to their present and immediate interests, special difficulties, and talents.
4. Homogeneous grouping -- placing students of similar aptitude and ability into the same group.
5. Heterogeneous (random) grouping -- placing students of various ability levels into the same group.
6. Inter-age grouping -- placing students of comparable ability in groups without regard to their chronological age.
7. Academic ability level -- previously determined achievement as measured by district level standardized tests.
8. Social characteristics -- the ways in which students work with each other, exercise control of their expressions, relate to others, and make friends.
9. Self-concept -- ideas, attitudes, and feelings about oneself.
10. Teacher behavior -- the manner in which a teacher conducts his/her self in the classroom.

Significance of the Study

This study was significant because it examined academic ability grouping of students in relationship to the amount of time they received from teachers in schools which seek to individualize instruction, effects which academic ability grouping has on students' self-concept, and academic ability grouping of students according to their social behavior as perceived by the teacher. The results are of particular interest to teachers and principals in IGE schools. Teachers in non-IGE schools who wish to individualize instruction also may wish to review their instructional time allocation as it relates to grouping students.

Limitations of the Study

The major limiting factors of this study were as follows:

1. The sample was limited to one elementary school in each of four selected Wisconsin school districts.
2. The sample was limited to students in the third grade.

Also, this exploratory study, using a small sample of Wisconsin elementary schools, precludes generalizing to a larger population.

Organization of the Study

This chapter provided a theoretical background for the study along with a statement of the problem, definition of terms,

statement of hypotheses, significance and limitations of the study. Chapter II describes the design and methodology together with the development of the instrumentation processes and procedures. Chapter III gives a description of how the data were analyzed. Findings and conclusions for the study are presented in Chapter IV with implications for future research.

CHAPTER II

DESIGN AND METHODOLOGY

This study involved a primary analysis and synthesis of data obtained during the 1979-80 school year from elementary schools attempting to deal with student variability using the IGE model. During this period the Resource Utilization Project of the Wisconsin Research and Development Center for Individualized Schooling conducted the first year of a three-year study of resource utilization in schools that individualize instruction. Previous studies have examined school-level data concerning student academic achievement and self-concept, teacher instructional time allocation, and student time allocation (Rossmiller & Geske, 1977; Rossmiller, 1978).

This chapter delineates the design and methodology of the study. It includes descriptions of the design of the study, the population and sample, the instrumentation used, the procedures and techniques employed, the time allocation variables, the statistical techniques used in the data analysis, and the classroom instructional climate in the sample schools.

Design of the Study

The study design is important because it aids the researcher in finding answers to hypothetical questions as well as in controlling sources of variance (Kerlinger, 1973). It enables the researcher to answer questions in a valid and objective manner. The design provides an overall plan, outline and scheme of the research. The overall plan of this study can be described as an empirical experimental design which utilized the teacher as the unit of analysis.

According to Kerlinger (1973):

> An experiment is taken to mean a scientific investigation in which an investigator manipulates and controls one or more independent variables and observes the dependent variable or variables for variation concomitant to the manipulation of the independent variables (p. 315).

This study utilized a multivariate design in that it examined the effects which several independent variables have on various dependent variables. This powerful method of analysis is appropriate for educational research because as Kerlinger stated:

> To account for the complex psychological and sociological phenomena of education requires design and analytic tools that are capable of handling the complexity, which manifests itself above all in multiplicity of independent and dependent variables (p. 149).

Population and Sample

The population for this study included all 244 third grade students in four Wisconsin elementary schools. During the spring and summer of 1979 the directors of the project selected a sample of districts and made initial contact with the school district administration to determine each district's interest in participation in the study. On-site visits were then made by the directors to each interested district and school to discuss the study with the principal and teachers and to ensure that schools met the following criteria for participation in the study:

1. A relatively stable enrollment and attendance area.
2. Representative of diverse demographic characteristics (two of the schools are located in small cities or rural areas and two of the schools are in medium-sized cities).
3. Attempting to individualize instruction.
4. Willing to make a long-term research commitment to participate with the Research and Development Center School Resource Utilization Project.

The four schools selected were located in small cities or rural areas and in medium sized cities, with the former category including schools located in a community of 10,000 people or less and the latter group including areas inhabited by at least 40,000 people.

Basic background information on the four sample schools is presented in Table 2.1. Included for each school are the approximate size of the surrounding community and the type of area served, geographic location, grades enrolled, and approximate enrollment.

Approximately 30 students were excluded from the initial sample of 244 for one or more of the following reasons: parental consent to participate was not granted, moved during the school year, or did not have baseline test data available. Thus the initial sample available for the present study consisted of 214 students.

TABLE 2.1

BACKGROUND INFORMATION ON SAMPLE SCHOOLS

School	Approximate Surrounding Community Size	Type of Area Served	Geographic Location	Grades Enrolled	Approximate Enrollment
1	50,000	Medium-City	Northern Wisconsin	K-6	580
2	2,500	Rural	Southern Wisconsin	K-6	470
3	8,600	Small-City	Southern Wisconsin	K-6	520
4	50,000	Medium-City	Northern Wisconsin	K-6	465

One third grade teacher in each school, randomly selected from the third grade teachers in each of the four districts, was chosen to participate in this study. These four teachers were asked to rank the students in their reading class from high to low in academic ability. A stratified final sample of 12 students was selected from the reading class of each of the four participating teachers. Thus a final sample of 48 students was used in this study.

Instrumentation

Six instruments were used to gather data for this study. They included: (1) Teacher Interview; (2) Teacher Questionnaire; (3) Student Record Data Sheet; (4) Self-Observation Scales (SOS); (5) Classroom Observation Form; and (6) Comprehensive Tests of Basic Skills (CTBS), Stanford Achievement Test (SAT), and California Achievement Test (CAT). A description of each instrument follows.

The Teacher Interview. The Teacher Interview (see Appendix A) was developed to determine what criteria teachers used for grouping their students for reading instruction and the teachers' estimate of the percentage of instructional time they allocated to various groups. Teachers were asked to express their opinions regarding various aspects of the school's curriculum and of their particular class. Some of the questions which comprised this instrument were adapted from an instrument developed by Evertson and Brophy (1974).

Teacher Questionnaire. The Teacher Questionnaire (see Appendix B) was designed to determine the teachers' perception of their students' personal behavior. Fifteen types of behavioral patterns were listed for each student and the teacher was asked to rank each student behavior in that pattern on a scale ranging from one (strongly agree) to four (strongly disagree). This instrument was adopted from an instrument used by Willis (1972).

Student Record Data Sheet. The Student Record Data Sheet (see Appendix C) was designed by the School Resource Utilization Project to obtain background information; aptitude, achievement, or intelligence test scores; and attendance information on individual students.

Self-Observation Scales (SOS). The Intermediate level of the Self-Observation Scales (SOS) (see Appendix D) developed by Katzenmeyer and Stenner (1975) consists of 60 items which measure children's perceptions of themselves and their relationship to their peers, teachers, and school. It is a direct, self-report, group-administered instrument designed to measure seven areas of student affective behavior. The seven domains are: self-acceptance, self-security, social maturity, social confidence, school affiliation, teacher affiliation, and peer affiliation. Katzenmeyer and Stenner (1975, 1976) reported the validity and reliability of this instrument. A brief description of each domain has been included in Appendix D.

Classroom Observation Form. The Classroom Observation Form (see Appendix E) was designed by the Resource Utilization Project to measure the actual amount of time students spend on- and off-task while in the classroom. The instrument was developed for this study after an extensive review of other classroom observation instruments.

The form is designed so five students can be observed simultaneously, at two-minute intervals. Students' use of time is divided into eight behavioral categories: independent study, one-to-one instruction, small-group instruction, large-group instruction, two or more students studying together, process behavior, not-on-task behavior, and non-observable behavior. Information concerning the overall classroom environment may also be noted on this form. Examples of such information include the size of the class; the particular subject being studied, the number of teachers, aides, or other adults; the date of the observation; the name of the observer; and the time the particular class began and ended. Additional information was collected concerning the size of a small or a large group and was written in the "notes" section of the form. The instrument also includes an area where observers can write a brief description of each student. This is helpful in that it helps the observer identify the student being observed when an unfamiliar group is being observed for the first time.

The Classroom Observation Form provided other specific advantages, such as the possibility of following more than one student at a time, the ability to distinguish between on-task and off-task behavior, the ability to distinguish different instructional arrangements, and enough flexibility to permit adaptation to different classroom environments.

This instrument was pilot tested by the Resource Utilization Project to ensure interobserver reliability. After an initial testing and training period, interobserver reliability was calculated by the percentage agreement method. Percentages between pairs of observers for different subjects ranged from 76 percent to 100 percent with a mean of 90 percent.

Achievement Tests. The Comprehensive Tests of Basic Skills (CTBS) is comprised of a series of batteries for students in kindergarten through grade 12. CTB/McGraw-Hill (1974) reported the tests as being valid and reliable. The Mental Measurement Yearbook concurs with this judgment (see Appendix F).

The Stanford Achievement Test (SAT) (Harcourt, Brace, Jovanovich, 1972) is a series of comprehensive tests, developed to assess students' achievement and covers classroom skills in several subject areas. This test has been found to score high on reliability and validity as has been reported by The Mental Measurement Yearbook (see Appendix G).

The California Achievement Test measures the achievement of students from kindergarten through twelfth grade. The test is

reported to be valid and reliable by McGraw-Hill and the California Test Bureau (CTB) (1977) (see Appendix H).

Data Collection

The directors of the Resource Utilization Project contacted principals and staff members of the sample schools during the summer of 1979. Principals provided a roster of third grade students from each school and parental consent forms were mailed to parents (see Appendix I). This consent form assured parents of the anonymity of participants. Principals and the third grade teachers also signed consent forms (see Appendix J).

Students' daily and weekly school schedules were obtained from the third grade teachers. Observers were able to refer to these schedules when determining procedures for observing particular students. The schedules provided such information as the student's homeroom teacher, the subject and time which the subject was taught, and the instructor for each subject.

Student records were obtained from students' personal cumulative folders from each school.

Several observations were made on each student during the 1979-80 school year by members of the Resource Utilization Project team. Each student was observed at intervals during the year for a total of three complete days, and observations were recorded on the Classroom Observation Form. Individual students who had a large portion of non-observable time or who, for various reasons,

had an extremely short reading class were observed for an additional day to ensure representative data were obtained.

Teachers were interviewed and filled out the questionnaire form during the period January to March, 1980.

The Self-Observation Scales (SOS) instrument was administered to students by members of the research team during March, 1980, and the answer forms were machine scored by the publisher.

Three achievement tests had been administered to students in the sample schools prior to the year the study began. Reading scores on these tests were used to assess the academic ability levels of students.

Description of Time Variables

This study utilized two major types of time variables: teacher instructional time allocation and student time allocation. A description of these variables and the methods used in calculating them follows.

Allocated Reading Time (ART) was obtained by calculating the number of observed frequencies and multiplying them by two (to account for the two-minute interval between observation times). This method of calculation produces the absolute time. Information needed for these calculations was obtained from the Classroom Observation Form.

Teacher Instructional Time (TIT) was the amount of time teachers spent instructing students in reading. Two methods were

used in calculating teacher instructional time. Method I involved the use of observational category three (small-group instruction). The proportion of time spent in each of the categories 1 to 8 was calculated for each student. Students were then sorted into low and high independent groups using scores from category three (small-group instruction). The mean scores for both low and high groups were calculated.

Method II involved observational categories two (one-to-one instruction) and three (small-group instruction). The proportion of time spent in either category two or three was calculated for each student. Students were then sorted into low versus high independent groups. The mean scores for both the low and high groups were calculated.

Student Time Allocation (STA) represents the amount of time the student spent working independently engaging in off-task or on-task behavior, or involved in process behavior. A description and method of calculating these types of students' time usage follows.

Independent Time (IT) includes the amount of time the student spent reading, writing, or working alone under the general supervision of the teacher. The mean score from category one was calculated.

Off-Task Behavior Time (OTBT) involves categories six (process behavior) and seven (not on-task). Process behavior includes

time which the student spent waiting for the teacher before proceeding to the next step or activity, getting directions or correcting tests. Time not-on-task is time the student spent resting, staring, wandering around, sharpening pencils, cleaning a desk, or putting paper in a trash basket. The proportion of time off-task was obtained by summing the proportions of time spent in categories six and seven.

Time On-Task (TOT) includes the time the student spent working independently, in one-to-one situations, in a small group, in a large group or with other students. The proportion of time on-task in reading was obtained by summing the proportions of time spent in categories one through five.

Process Time (PT), as previously stated, is time the student spent waiting for the teacher before proceeding to the next step or activity, getting directions, or correcting tests. The proportion of time for each student in category six was calculated.

Data Analysis

The differences between the means of high and low groups were analyzed statistically using the *t* test, which was used to test hypotheses 1, 3, and 4:

H_1 There is no significant difference in the amount of time students at different academic levels receive from their teachers.

H_3 There is no difference in the teacher's perception of a student's social characteristics across the ability groups in which the student is placed.

H_4 There is no difference in students' self-concept across different ability groupings.

The effects that students' social characteristics and self-concept have on the amount of time allocated to them were tested in Hypothesis 2 using a multiple regression analysis:

H_2 There is no linear combination of students' social characteristics and students' self-concept which can account for a significant portion of the variance in amount of time allocated to students.

Pearson Product-Moment correlations were utilized in the ancillary hypotheses to determine the strength of relationships between independent and dependent variables:

1. There is no relationship between the amount of time students spend working independently and students' academic ability level.
2. There is no relationship between the amount of students' off-task time and the social maturity level of students as measured by Self-Observation Scales (SOS).
3. There is no relationship between students' on-task classroom behavior and students' affiliation with their teacher as measured by Self-Observation Scales (SOS).

4. There is no relationship in the amount of process behavior permitted to students by their teacher and the students' academic ability level.

Sample Schools and Third Grade Instructional Climate

As mentioned previously, third grade students from four schools comprised this sample. For purpose of this study schools were designated as 1, 2, 3, and 4. A description of each school and its instructional climate in reading follows.

School 1. School 1 is one of the 18 elementary schools in a city of approximately 50,000 people. The school's student population is approximately 580. Students either walk to school or are bussed in from the surrounding areas. Since its construction, the school has experienced increased enrollment, making it necessary to enlarge the school building and to add other needed facilities, such as an instructional materials center, gymnasium, art room, and office area. The new addition was built in 1974. An attractive library has been organized with a well equipped IMC. The school has two gymnasiums with the smallest gym being used as a cafeteria during the noon hour.

School 1, which is in the implementation stage of the IGE model, might be described as having a traditional physical plant. There are teams of teachers (third and fourth graders are in one unit) but all instruction at the third grade level is carried on

by three third grade teachers. Students are regrouped for reading, mathematics, spelling, and homeroom. Teachers are assigned two or three reading groups where children are grouped according to their academic ability.

Students were placed in groups on the basis of achievement test scores, teachers' ratings or teachers' judgment of pupils' ability, oral reading ability of students, and range of achievement level within the group. Even though students could be regrouped after the end of a unit test, little or no regrouping took place. Once students were placed in a particular group, they tended to remain in the same group for the entire school year.

The teacher rated the class as average both in terms of the amount of effort students put forth in school and in terms of the overall academic ability level of the class. The teacher's expressed preference was to be a faculty member in School 1 and to work with students of average reading ability. The teacher chosen for the sample from this school had two reading groups. One reading group had a total of eight (8) students, the other group had a total of 13 students. When asked, "To which group (high, middle, or low) do you direct your level of instruction?" the teacher's reply was: "The average group."

The teacher reported that she expected 90 percent of the students to master the curriculum completely. She estimated that 10 percent of her time was spent with individual students, 70 percent with subgroups and 20 percent with the whole class. The

teacher reported that during a group discussion she spent 60 percent of the time calling on students who raised their hands and 40 percent of the time calling on students who had not raised their hands.

The school day for the teaching staff was from 8:00 a.m. to 3:45 p.m., and the students' school day ran from 8:45 a.m. to 3:30 p.m.

School 2. School 2 was located in a small town/rural area and served students from the town as well as from a neighboring town. The enrollment of the school was approximately 470 students in grades K-6. The school day for the teaching staff was from 8:15 a.m. to 3:45 p.m.; the student school day was from 8:55 a.m. to 3:30 p.m.

There were 58 students in the third grade, with two regular homeroom teachers as well as special teachers in music, art, library science, physical education, learning disabilities, and speech correction. The school was quite traditional in character with relatively limited implementation of the IGE model.

Third grade students were ability grouped by homeroom, where the students remained during the entire morning in a "language arts block." Students were regrouped by homeroom for science and social studies with one of the third grade teachers in charge of social studies instruction and the other in charge of science.

School 2's sample teacher rated the class as putting forth a "lot of effort." The overall academic ability level of the class was rated as average to above average. The teacher's expressed preference was to teach in School 2 with students of average reading ability. She indicated that 60 to 65 percent of the students were expected to master the reading curriculum completely.

When asked, "Do you pitch your level of instruction to the academically high, average, or low students when teaching a lesson for the whole class?" the teacher placed a checkmark beside each group. When the researcher rephrased the question, the teacher's response was "probably the average group." The teacher estimated that she spent 5 percent of her time instructing individual students, 75 percent with subgroups, and 20 percent with the whole class. During group discussion, the teacher estimated that she spent 75 percent of the time calling on students who raised their hands and 25 percent of the time calling on students who had not raised their hands.

School 3. School 3 exhibited a high degree of implementation of the IGE model, even though students were seated in a traditional classroom style. The school was the newest of the elementary schools in the area and was the only open-space school in this small city of approximately 8,600 population. The school was completed in the spring of 1978 and houses approximately 520 students. The school day for the teaching staff was from 8:00 a.m. to 4:00 p.m. The students' school day was from 8:20 a.m. to 3:10 p.m.

The principal and a majority of the teachers used the shared decision-making concept in planning the school's design and interior decorations. The building is comprised of two floors. Art, music, special education, gym classes, and the all-purpose room/lunch room occupy the first floor. The second floor includes the principal's office, counselor's office, nurse's office, and the primary, intermediate and upper unit areas. The three instructional units each occupy a wing of the building with the IMC located in an area between them. Each wing or unit may use movable portable walls to subdivide its section.

Forty-three third graders were distributed between two units: (1) the primary unit which included grades one, two, and three; and (2) the intermediate unit which included grades three and four. (The upper unit included grades five and six.) There was one third grade teacher in the primary unit and two third grade teachers in the intermediate unit.

Students were ability grouped utilizing a nongraded, partially multiage concept. The intermediate third grade teachers had both third and fourth graders for some subjects and only third graders for other subjects. The primary third graders, so-called because of their academic ability level, may have occasional classes in social studies and science with the intermediate third graders, but generally primary and intermediate reading and mathematics were not intermingled.

The teacher from School 3 included in the sample had two reading groups with 16 students in one group and 9 students in the other group. Students were placed into groups primarily on the basis of teachers' ratings or the teacher's judgment of pupils' ability, social and emotional maturity level, oral reading ability, and range of achievement level within groups. Although children may be regrouped at the end of the semester, little or no regrouping occurred during the school year in which observations were made.

The sample teacher reported that a majority of students in her reading class put forth a "lot of effort" in school and that the other students in her class put forth "an average amount of effort." The teacher said she preferred to teach in her present school with no expressed preference as to student ability level. The overall academic ability level in the class ranged from average to high with a majority of the students having average ability. According to the teacher, she expected 90 percent of the students to master the curriculum completely. She indicated that she aimed her level of instruction to the average and the high groups of students.

Instructing individual students occupied an estimated 10 percent of the teacher's time, with 30 percent spent with subgroups and 60 percent spent with the whole class. During a group discussion, the teacher generally spent 70 percent of the time calling on students who raised their hands, 10 percent of the time calling on

students in a particular order (e.g., alphabetically, seat arrangement, etc.), and 20 percent of the time calling on students who had not raised their hands.

School 4. School 4 is a modern open-space building which was constructed in 1976. There were three units in the school. Unit I included first and second graders, Unit II was composed of third and fourth graders, and Unit III contained fifth and sixth graders. Each unit was housed in a separate wing of the school plant. Movable blackboards/bulletin boards were utilized in these units to separate various classrooms.

The lunchroom/gym, IMC, and office complex opened off the central entrance hallway and art and music classes were housed in a separate wing. The IMC occupied a large, colorful area and included various small rooms, such as the audiovisual equipment room, nearby. The IMC was located approximately in the center of the building and was surrounded by the unit areas as well as rooms used for other special purposes. Kindergarten students utilized some of the Unit III area.

By using movable units, the five Unit II teachers had divided their area into six partially walled-off classrooms by creating a central hallway with three classrooms on each side. One of the six rooms was used as a multipurpose area. Third grade teachers occupied three of the six rooms in this area.

The school's student population was approximately 465 with 71 students enrolled as third graders. The school day for the teaching staff was from 8:15 a.m. to 4:15 p.m., and the students' school day was from 8:35 a.m. to 3:15 p.m.

Students were placed in homerooms according to their grade level. Students were ability grouped for mathematics and language arts. Mathematics classes were basically composed of third graders and were taught by the three third grade teachers. Language arts utilized multiage academic ability groupings with third and fourth graders intermingled. Third grade students could go to any one of the five unit teachers for reading instruction, depending on the group to which they belonged.

The sample teacher for School 4 had two reading groups with approximately 15 students in each group. Little or no regrouping took place once students had been assigned to a group. The criteria used for forming reading groups were reported as "number of groups in one room is primarily dependent upon range of achievement as determined by a placement test and teacher judgment. . . . Comprehension and knowledge of vocabulary will determine which text I choose. . . . Decoding skills can be remediated individually or in small groups. . . . Oral reading is used only in initial placement, at this level. . . . Miscalling is usually only a mechanical problem if the comprehension and vocabulary skills are strong."

The amount of effort which students put forth in school was reported as "average," with some of the students being described as hard workers and others not working to their potential. The teacher was satisfied to remain in her present school. Even though no preference for a particular academic level was indicated, the teacher stated: "I enjoy remedial reading but I also like a high ability group. . . . Both can be a challenge." The overall academic ability level of the reading class was rated as "average" by the teacher.

As reported by the teacher, 95 percent of the children were expected to master the curriculum completely. "It's high. . . . We try to adjust the curriculum to the student," suggested the teacher.

With regard to the teaching method used in calling on students, such as alphabetically or by seat arrangement, the teacher said: "I usually have a reason for calling on someone." When asked about the academic ability level to which instruction was directed, the teacher responded: "Mathematics and language arts are ability grouped. . . . Social studies is presented to the average but projects are individualized."

CHAPTER III

ANALYSIS OF THE DATA

In this chapter the results of the data analyses are reported. The chapter provides answers to questions concerning academic ability grouping of students as related to teacher instructional time allocation, students' self-concept, and students' social behavior. The three research questions answered were:

1. What is the relationship between the academic ability levels of students and the amount of teacher time allocated to them?
2. What is the relationship between the teacher's perception of students' social characteristics and students' academic ability group?
3. What is the relationship between students' self-concept and students' academic ability group?

Answers to these questions, stated as major hypotheses, were sought through *t*-test comparisons and multiple regression analysis. The first hypothesis investigated whether or not a significant difference existed between students' academic ability levels and teacher time allocation. The second hypothesis investigated which independent variable (student social characteristics or student self-concept) had a greater effect on the dependent variable (teacher instructional time allocation). The third hypothesis

tested whether or not the teachers' ratings of students' social characteristics affected the placement of a student in an ability group. The fourth hypothesis tested whether or not students' self-concept affected their ability group placement. In addition to the four major hypotheses, the analysis in this chapter also deals with four ancillary questions which explored the strength of relationships between selected independent and dependent variables.

Descriptive and inferential statistics reported for Hypotheses 1, 3, and 4 included the means, variances, standard deviations and t-test results for selected independent and dependent variables. The variables related to student social characteristics and student self-concept were regressed against teacher instructional time allocation. The resulting F ratios and significance levels, the value of R and the value of R^2 will be reported for the multiple regression analysis.

The four ancillary questions were answered by computing Pearson Product-Moment correlations to test the relationship between selected independent and dependent variables. The r values and significance levels are reported for these relationships.

Hypotheses

The results derived from testing the four hypotheses are discussed in this section. Hypotheses 1, 3, and 4 were tested by using a t test to determine the significance of the difference

between means, and Hypothesis 2 was tested through the use of multiple regression analysis. The results of the test of each hypothesis are reported and described in this section.

H_1 There is no significant difference in the amount of time students at different academic levels receive from their teachers.

Hypothesis 1 dealt with the amount of time teachers devoted to instructing students in reading who had been placed in low and high academic ability groups. Two methods were used to calculate teacher instructional time. Method I involved the proportion of time spent in observational category three (small-group instruction). Students were categorized in terms of their placement in low- or high-ability groups, and mean scores for each group were calculated. Method II involved two observational categories, time spent in one-to-one instruction and in small-group instruction using the proportion of time spent in either category. Students were categorized by their placement in low- and high-ability groups, and means for each group were calculated.

The amount of teacher instructional time allocated to students in a small group is compared with their group level in Table 3.1. The t value ($t = 2.683$) obtained was significant at the .01 level. Thus, the hypothesis was rejected. The low group's mean of .283 and the high group's mean of .208 indicate that teachers spent a higher proportion of their time in small-group instruction with children of low academic ability. Comparing the low

TABLE 3.1

COMPARISON BETWEEN SMALL GROUP INSTRUCTION AND GROUP LEVEL

Group Level	Group Size	Mean	Variance	Standard Deviation	
Low	24	.2833	.014595	.12081	t = 2.683
					df = 46
High	24	.2081	.004240	.06511	p = .01

group's variance and standard deviation with those of the high group indicates that the dispersion from the mean of the low group was greater than that of the high group.

As shown in Table 3.2, teachers spent a higher proportion of their time with the low group in a combination of one-to-one instruction and small-group instruction than they spent with the high group. The t value (t = 2.857) reflects a statistically significant difference at the .01 level. Thus, Hypothesis 1 again was rejected. The low group had a mean of .291 for the combination of one-to-one and small-group teacher instructional time, while the high group had a mean of .212. The variance was .013901 with a standard deviation of .11790 for the low group, and .004457 with a standard deviation of .06676 for the high group.

TABLE 3.2

COMPARISON BETWEEN ONE-TO-ONE INSTRUCTION PLUS SMALL-GROUP INSTRUCTION AND GROUP LEVEL

Group Level	Group Size	Mean	Variance	Standard Deviation	
Low	24	.2909	.013901	.11790	$t = 2.857$
					$df = 46$
High	24	.2119	.004457	.06676	$p = .01$

H_3 There is no difference in the teacher's perception of a student's social characteristics across the ability groups in which the student is placed.

Hypothesis 3 dealt with teachers' perceptions of how well students behaved in a classroom setting. Teachers were asked to rate their students' behavior on a scale from one (strongly agree) to four (strongly disagree) using 15 descriptive statements concerning behavioral patterns (see Appendix B).

The mean rating for the teachers' perceptions of students' behavior in terms of paying attention in class was 2.33 for the low group and 1.75 for the high group. The high group received the lowest mean score, indicating that teachers rated students in the high group as more attentive in class than students in the low group. Table 3.3 indicates that the t value ($t = 2.290$) was significant beyond the .05 level. The variance for the low group was

TABLE 3.3

COMPARISON BETWEEN GROUP LEVEL AND "PAYS ATTENTION IN CLASS"

Group Level	Sample Size	Mean	Variance	Standard Deviation	
Low	24	2.333	1.0145	1.0072	$t = 2.290$
					$df = 46$
High	24	1.750	.5435	.7372	$p = .03$

1.0145 with a standard deviation of 1.0072; the high group's variance was .5435 with a standard deviation of .7372.

As shown in Table 3.4, teachers' ratings of students' self-confidence suggests that teachers viewed members of the high group as being more self-confident than members of the low group. The mean score for the low group was 2.21 with a variance of .8678 and a standard deviation of .9315; the high group's mean was 1.71 with a variance of .3895 and a standard deviation of .6241. The t value for the comparison was significant beyond the .05 level.

The teachers' perceptions of the extent to which students demonstrated self-control indicated that teachers believed this behavior to be more prevalent in the high group than in the low group. As presented in Table 3.5, the mean for the low group was 2.92 with a variance of .4764 and a standard deviation of .6903,

TABLE 3.4

COMPARISON BETWEEN GROUP LEVEL AND
"HAS SELF-CONFIDENCE"

Group Level	Sample Size	Mean	Variance	Standard Deviation	
Low	24	2.208	.8678	.9315	t = 2.185
					df = 46
High	24	1.708	.3895	.6241	p = .03

TABLE 3.5

COMPARISON BETWEEN GROUP LEVEL AND
"DEMONSTRATES SELF-CONTROL"

Group Level	Sample Size	Mean	Variance	Standard Deviation	
Low	24	2.292	.4764	.6903	t = 2.522
					df = 46
High	24	1.750	.6304	.7940	p = .02

and the mean for the high group was 1.75 with a variance of .6304 and a standard deviation of .7940. When the means for the two groups were compared, the resulting t value was significant beyond the .05 level.

Table 3.6 presents data on the teachers' perceptions of students' ability to "get along well with others." The mean for the low group was 2.17 with a variance of .5979 and a standard deviation of .7614. The mean for the high group was 1.58 with a variance of .3406 and a standard deviation of .5836. The scores indicate that teachers found the descriptor, "gets along well with others," to be more applicable to members of the high group than to members of the low group. The t value obtained when the means were compared was significant beyond the .01 level.

The mean for the low group on the descriptor, "is creative and imaginative," was 2.00 with a variance of .6087 and a standard deviation of .7802; the mean for the high group was 1.71 with a variance of .3895 and a standard deviation of .6241. Table 3.7 indicates that the difference in the means for the two groups was not statistically significant. Although no significant difference was found, the high group received a low mean score, suggesting that teachers tended to view students in the high group as being somewhat more creative and imaginative than were students in the low group.

TABLE 3.6

COMPARISON BETWEEN GROUP LEVEL AND
"GETS ALONG WELL WITH OTHERS"

Group Level	Sample Size	Mean	Variance	Standard Deviation	
Low	24	2.167	.5797	.7614	$t = 2.979$
					$df = 46$
High	24	1.583	.3406	.5836	$p = .01$

TABLE 3.7

COMPARISON BETWEEN GROUP LEVEL AND
"IS CREATIVE AND IMAGINATIVE"

Group Level	Sample Size	Mean	Variance	Standard Deviation	
Low	24	2.000	.6087	.7802	$t = 1.430$
					$df = 46$
High	24	1.708	.3895	.6241	$p = .16$

Data related to the student social behavioral pattern, "exhibits leadership," are shown in Table 3.8. The mean for the low group was 2.33 with a variance of .6667 and a standard deviation of .8165, while the mean for the high group was 2.04 with a variance of .6504 and a standard deviation of .8065. The difference in means was not statistically significant, although the high group received slightly more favorable ratings than did the low group.

The mean rating for the low group on the student social behavioral pattern, "has many friends," was 2.21 compared to 1.75 for the high group. The low group's variance was .3460 with a standard deviation of .5882 and the high group's variance was .1957 with a standard deviation of .4423. The data shown in Table 3.9 indicate that teachers were more inclined to agree with the descriptor, "has many friends," when rating members of the high group than when rating those in the low group. As indicated in Table 3.9, the difference in the two means was statistically significant beyond the .01 level.

Table 3.10 shows data concerning teachers' perceptions of their students' behavior in terms of "working hard" in class. The mean for the low group was 2.08 with a variance of .8623 and a standard deviation of .9286. The mean for the high group was 1.63 with a variance of .5924 and a standard deviation of .7697. The difference in the means of the two groups was not statistically significant at the .05 level, although the high group tended to receive more favorable ratings on this descriptor.

TABLE 3.8

COMPARISON BETWEEN GROUP LEVEL AND
"EXHIBITS LEADERSHIP"

Group Level	Sample Size	Mean	Variance	Standard Deviation	
Low	24	2.333	.6667	.8165	t = 1.245
					df = 46
High	24	2.042	.6504	.8065	p = .22

TABLE 3.9

COMPARISON BETWEEN GROUP LEVEL AND
"HAS MANY FRIENDS"

Group Level	Sample Size	Mean	Variance	Standard Deviation	
Low	24	2.208	.3460	.5882	t = 3.051
					df = 46
High	24	1.750	.1957	.4423	p = .01

TABLE 3.10

COMPARISON BETWEEN GROUP LEVEL AND "WORKS HARD"

Group Level	Sample Size	Mean	Variance	Standard Deviation	
Low	24	2.083	.8623	.9286	t = 1.862
					df = 46
High	24	1.625	.5924	.7697	p = .07

The mean score for the rating on "is mature," shown in Table 3.11, was 2.25 for the low group and 1.63 for the high group. The low group had a variance of .6304 with a .7940 standard deviation; the high group had a variance of .4185 with a .6469 standard deviation. The data indicate that teachers were more likely to agree with the statement, "is mature," when referring to members of the high group than when referring to members of the low group. The difference in the means of the two groups was statistically significant beyond the .01 level.

As illustrated in Table 3.12, the mean rating for the descriptor, "is cautious," for the low group was 2.21 with a variance of .5199 and a standard deviation of .7211. The mean rating for the high group was 1.71 with a variance of .7373 and a standard deviation of .8587. According to these data, the high group students were perceived as being more "cautious," than were the low

TABLE 3.11

COMPARISON BETWEEN GROUP LEVEL AND
"IS MATURE"

Group Level	Sample Size	Mean	Variance	Standard Deviation	
Low	24	2.250	.6304	.7940	t = 2.990
					df = 46
High	24	1.625	.4185	.6469	p = .01

TABLE 3.12

COMPARISON BETWEEN GROUP LEVEL AND
"IS CAUTIOUS"

Group Level	Sample Size	Mean	Variance	Standard Deviation	
Low	24	2.208	.5199	.7211	t = 2.185
					df = 46
High	24	1.708	.7373	.8587	p = .03

group students. The difference in the means was significant beyond the .05 level.

Results of teacher ratings for the student behavioral pattern, "is neat," can be seen in Table 3.13. The mean for the low group was 2.00 with a variance of .7826 and a standard deviation of .8847, and the mean for the high group was 1.58 with a variance of .6014 and a standard deviation of .7755. The difference in the two means was not statistically significant, although teachers tended to perceive that members of the high group were "neater" than were members of the low group.

TABLE 3.13

COMPARISON BETWEEN GROUP LEVEL AND "IS NEAT"

Group Level	Sample Size	Mean	Variance	Standard Deviation	
Low	24	2.000	.7826	.8847	t = 1.735
					df = 46
High	24	1.583	.6014	.7755	p = .09

The mean rating for the low group on the student behavioral pattern, "speaks clearly," was 1.92 compared to 1.46 for the high group. The variance for the low group was .4275 with a standard deviation of .6539, and the variance for the hign group was .2591 with a standard deviation of .5090. Teachers were more likely to apply the descriptor, "speaks clearly," when referring to members of the high group than when referring to members of the low group. As the data presented in Table 3.14 indicate, the difference in the means was statistically significant at the .01 level.

Table 3.15 provides data on the descriptor "helps other children." Mean scores ranged from 2.00 for the low group to 1.71 for the high group. Variance for the low group was .6957 with a standard deviation of .8341, while variance for the high group was .3895 with a standard deviation of .6241. The difference in the means was not statistically significant. However, the ratings accorded the high group were a bit more favorable than were those received by the low group.

The mean ratings for the student behavioral pattern, "is obedient," were 1.92 and 1.54 for the low group and the high group, respectively. Variance for the low group was 1.0362 with a standard deviation of 1.0180, and variance for the high group was .6069 with a standard deviation of .7790. As shown in Table 3.16, the difference in the means was not statistically significant. Although the

TABLE 3.14

COMPARISON BETWEEN GROUP LEVEL AND
"SPEAKS CLEARLY"

Group Level	Sample Size	Mean	Variance	Standard Deviation	
Low	24	1.917	.4275	.6539	t = 2.710
					df = 46
High	24	1.458	.2591	.5090	p = .01

TABLE 3.15

COMPARISON BETWEEN GROUP LEVEL AND
"HELPS OTHER CHILDREN"

Group Level	Sample Size	Mean	Variance	Standard Deviation	
Low	24	2.000	.6957	.8341	t = 1.372
					df = 46
High	24	1.708	.3895	.6241	p = .18

difference was not significant, the high group received a slightly more favorable rating from teachers than did the low group.

TABLE 3.16

COMPARISON BETWEEN GROUP LEVEL AND "IS OBEDIENT"

Group Level	Sample Size	Mean	Variance	Standard Deviation	
Low	24	1.917	1.0362	1.0180	t = 1.433
					df = 46
High	24	1.542	.6069	.7790	p = .16

As can be seen in Table 3.17, the mean for the low group on the descriptor, "participates in class discussion," was 2.29, and the mean for the high group was 1.58. The variance for the low group was .4764 with a standard deviation of .6903, while the variance for the high group was .3406 with a standard deviation of .5836. Teachers more frequently agreed with the statement, "participates in class discussion," when they were referring to the high group than when they were referring to the low group. The difference between the two means was statistically significant beyond the .001 level.

TABLE 3.17

COMPARISON BETWEEN GROUP LEVEL AND
"PARTICIPATES IN CLASS DISCUSSION"

Group Level	Sample Size	Mean	Variance	Standard Deviation	
Low	24	2.292	.4764	.6903	$t = 3.839$
					$df = 46$
High	24	1.583	.3406	.5836	$p = .001$

H_4 There is no difference in students' self-concept across different ability groupings.

Hypothesis 4 dealt with children's perceptions of themselves and their relationship to their peers, teachers, and school. Students were tested in seven areas dealing with their affective behavior: self-acceptance, self-security, social maturity, social confidence, school affiliation, teacher affiliation, and peer affiliation. Scores from these seven areas were compared with their academic ability group level to determine if students' self-concept was related to their group placement. None of the seven areas was found to be statistically significant; thus, Hypothesis 4 could not be rejected.

Mean scores for low and high group students are compared in Tables 3.18 through 3.24. A higher mean score corresponds with a higher student self-concept.

Table 3.18 displays data comparing students' academic ability group level and students' self-acceptance scores. The mean self-acceptance score for the low group was 55.5 with a variance of 41.91 and a standard deviation of 6.474. The high group's mean self-acceptance score was 55.1 with a variance of 55.99 and a standard deviation of 7.483. The difference in the means was not statistically significant.

TABLE 3.18

COMPARISON BETWEEN GROUP LEVEL AND "SELF-ACCEPTANCE"

Group Level	Sample Size	Mean	Variance	Standard Deviation	
Low	24	55.50	41.91	6.474	$t = .206$
					$df = 46$
High	24	55.08	55.99	7.483	$p = .84$

The mean self-security score for the low group was 48.7 with a variance of 109.26 and a standard deviation of 10.453. The high group's mean score was 51.4 with a variance of 95.46 and a standard deviation of 9.770. As shown in Table 3.19 the difference in the

TABLE 3.19

COMPARISON BETWEEN GROUP LEVEL AND "SELF-SECURITY"

Group Level	Sample Size	Mean	Variance	Standard Deviation	
Low	24	48.71	109.26	10.453	$t = .913$
					$df = 46$
High	24	51.37	95.46	9.770	$p = .37$

means was not statistically significant. However, the members of the high group rated themselves slightly higher in terms of being "secure" than did members of the low group.

As indicated in Table 3.20, the mean score on social maturity for the low group was 53.3 with a variance of 45.35 and a standard deviation of 6.734, while the mean score for the high group was 54.7 with a variance of 25.36 and a standard deviation of 5.036. The difference in the mean scores was not statistically significant, although the high group's mean was slightly greater than the low group's mean.

Table 3.21 presents the results of a comparison between academic ability group level and social confidence scores. The mean social confidence score for the low group was 53.2 with a variance of 68.26 and a standard deviation of 8.262. The mean for the high

TABLE 3.20

COMPARISON BETWEEN GROUP LEVEL AND
"SOCIAL MATURITY"

Group Level	Sample Size	Mean	Variance	Standard Deviation	
Low	24	53.29	45.35	6.734	$t = .801$
					$df = 46$
High	24	54.67	25.36	5.036	$p = .43$

TABLE 3.21

COMPARISON BETWEEN GROUP LEVEL AND
"SOCIAL CONFIDENCE"

Group Level	Sample Size	Mean	Variance	Standard Deviation	
Low	24	53.21	68.26	8.262	$t = .333$
					$df = 46$
High	24	53.92	40.32	6.351	$p = .74$

group was 53.9 with a variance of 40.34 and a standard deviation of 6.351. The difference in the means was not statistically significant, indicating that both low-group and high-group members viewed themselves as being socially confident.

The mean scores for school affiliation are shown in Table 3.22. The low group's mean score was 54.00 with a variance of 87.57 and a standard deviation of 9.358, while the mean score for the high group was 51.1 with a variance of 110.46 and a standard deviation of 10.510. The difference in the mean scores was not statistically significant. Although no statistical significance was found, members from the low group rated themselves more favorable on the descriptor, "school affiliation," than did members from the high group.

TABLE 3.22

COMPARISON BETWEEN GROUP LEVEL AND "SCHOOL AFFILIATION"

Group Level	Sample Size	Mean	Variance	Standard Deviation	
Low	24	54.00	87.57	9.358	$t = 1.001$
					$df = 46$
High	24	51.12	110.46	10.510	$p = .33$

Table 3.23 gives the results of a comparison between academic ability group level and scores on teacher affiliation. The mean score on teacher affiliation for the low group was 55.2 with a variance of 20.93 and a standard deviation of 4.575, while the mean for the high group was 53.9 with a variance of 38.55 and a standard deviation of 6.209. Although the difference in the mean scores was not statistically significant, members from the low group rated themselves higher in terms of "knowing" their teacher than did members of the high group.

TABLE 3.23

COMPARISON BETWEEN GROUP LEVEL AND "TEACHER AFFILIATION"

Group Level	Sample Size	Mean	Variance	Standard Deviation	
Low	24	55.17	20.93	4.575	$t = .821$
					$df = 46$
High	24	53.87	38.55	6.209	$p = .42$

The mean score on peer affiliation for the low group was 49.5 with a variance of 72.9 and a standard deviation of 8.536. The mean for the high group was 53.8 with a variance of 65.10 and a standard deviation of 8.069. As shown in Table 3.24, the difference in the means was not statistically significant. However, the

TABLE 3.24

COMPARISON BETWEEN GROUP LEVE' AND "PEER AFFILIATION"

Group Level	Sample Size	Mean	Variance	Standard Deviation	
Low	24	49.54	72.87	8.536	t = 1.790
					df = 46
High	24	53.83	65.10	8.069	P = .08

mean scores indicated that the level of peer affiliation was higher for members of the high group than for members of the low group.

H_2 There is no linear combination of students' social characteristics and students' self-concept which can account for a significant portion of the variance in amount of time allocated to students.

Hypotheses 2 was tested by regressing students' social behavior characteristics and students' self-concept scores against teacher instructional time allocation. This procedure provided an estimate of the effect on the dependent variable (teacher time allocation) of a change in the independent variables (students' social characteristics and students' self-concept).

The degree of relationship between the variables is expressed by the correlation coefficient (r) and the proportion of variance in the dependent variable attributable to the independent variables is denoted by R^2. As indicated in Yamane (1964), R^2 may be

interpreted from three viewpoints.

> First, it may be interpreted as measuring the amount of improvement (in terms of reducing the total error) due to the regression line. Second, it may be interpreted as measuring the closeness of fit of the regression line to the points. And third, it may be interpreted as measuring the degree of linearity of the scatter of the points (p. 419).

Fifteen variables were used to measure students' social characteristics and seven variables were used to measure students' self-concept. As shown in Table 3.25, the 22 independent variables produced a coefficient of multiple correlation (R) of .7364, accounting for 54 percent of the variance in teacher allocation of time to small-group instruction. Eight of the variables showed negative partial correlations with the dependent variable, and the remaining 14 variables exhibited rather low positive correlation coefficients with the dependent variable. The student social characteristic NEAT (is neat) and the student self-concept variable (school affiliation) showed the highest partial correlation coefficents of -.458 and .297, respectively. From among the variables, only NEAT reached a statistically significant level at or beyond the .05 level. The associated F ratio of 1.35 was not statistically significant.

Table 3.26 shows the results of regressing student social characteristics and student self-concept scores against the teachers' allocation of one-to-one instructional time plus small group instructional time. The 22 variables produced a coefficient of

TABLE 3.25

REGRESSION OF STUDENT SOCIAL CHARACTERISTICS AND STUDENT SELF-CONCEPT ON TEACHER'S ALLOCATION OF SMALL-GROUP INSTRUCTIONAL TIME

Variable No.	Name	Standardized Regression Coefficient	Partial Correlation Coefficient	Partial F Value (1 & 25 df)	Observed Sig. Level
4	PATEN	.2892	.157	.62779	.4356
5	SLFCONF	-.0030	-.002	.00008	.9932
6	SLFCNTRL	.0234	.017	.00707	.9336
7	GTALONG	-.2705	-.145	.53419	.4716
8	CREATE	-.3086	-.246	1.60983	.2162
9	LEADER	.2379	.182	.85544	.3639
10	FRIENDS	.1384	.088	.19536	.6623
11	WORKS	-.4203	-.270	1.96267	.1735
12	MATURE	.2480	.140	.50024	.4859
13	CAUTIOUS	.4311	.254	1.73060	.2003
14	NEAT	-.6831	-.458	6.62822	.0163*
15	SPKLEAR	.2759	.173	.77251	.3878
16	HELPOTHR	.0233	.014	.00521	.9430
17	OBEDIENT	.0202	.011	.00292	.9573
18	CLSDCUSS	.0602	.045	.05106	.8231
19	SLFXEPT	-.3336	-.220	1.27275	.2700
20	SLFSECR	.2999	.201	1.05531	.3141
21	SOCLMAT	.1427	.085	.18216	.6732
22	SOCLCONF	-.2563	-.217	1.23625	.2768
23	SKULAFIL	.4521	.279	2.42484	.1320
24	TCHRAFIL	.2620	.143	.52347	.4761
25	PEERAFIL	-.0983	-.052	.06791	.7965

Constant Term = -14.23499

$R = .7364$

$R^2 = .5423$

* Significant at or beyond the .05 level

TABLE 3.25 (Continued)

Analysis of Variance Summary

Source of Variation	Sum of Squares	df	Mean Square
Linear Regression	12482.89402	22	567.40427
Residuals From Regression	10535.77265	25	421.43091
Corrected Total	23018.66667	47	

F-Ratio = 1.35 (with 22 and 25 df)

Significance Level = .2353

TABLE 3.26

REGRESSION OF STUDENT SOCIAL CHARACTERISTICS AND STUDENT SELF-CONCEPT ON TEACHER'S ALLOCATION OF ONE-TO-ONE AND SMALL-GROUP INSTRUCTIONAL TIME

Variable No.	Name	Standardized Regression Coefficient	Partial Correlation Coefficient	Partial F Value (1 & 20 df)	Observed Sig. Level
4	PATEN	.1963	.108	.29563	.5915
5	SLFCONF	.0506	.029	.02150	.8846
6	SLFCNTRL	.0626	.046	.05195	.8216
7	GTALONG	-.2528	-.137	.47685	.4962
8	CREATE	-.3446	-.275	2.05234	.1684
9	LEADER	.2467	.190	.94073	.3414
10	FRIENDS	.1493	.096	.23265	.6338
11	WORKS	-.4017	-.261	1.83237	.1880
12	MATURE	.2789	.159	.64686	.4288
13	CAUTIOUS	.4128	.247	1.62191	.2145
14	NEAT	-.7001	-.471	7.11721	.0132*
15	SPKLEAR	.2769	.176	.79566	.3809
16	HELPOTHR	.0221	.014	.00479	.9454
17	OBEDIENT	.0380	.021	.01055	.9190
18	CLSDCUSS	.0296	.022	.01264	.9114
19	SLFXEPT	-.3293	-.220	1.26807	.2708
20	SLFSECR	.3102	.210	1.15431	.2929
21	SOCLMAT	.1514	.091	.20939	.6512
22	SOCLCONF	-.2267	-.195	.98847	.3296
23	SKULAFIL	.4134	.277	2.06970	.1627
24	TCHRAFIL	.2842	.157	.62975	.4349
25	PEERAFIL	-.1758	-.094	.22224	.6414

Constant Term = -12.0653

$R = .7432$

$R^2 = .5523$

* Significant beyond the .05 level

TABLE 3.26 (Continued)

Analysis of Variance Summary

Source of Variation	Sum of Square	df	Mean Square
Linear Regression	12825.90031	22	582.99547
Residuals From Regression	10397.76636	25	415.91065
Corrected Total	23223.66667	47	

F-Ratio = 1.40 (with 22 and 25 df)

Significance Level = .2067

multiple correlation of .7432, accounting for 55 percent of the variance of the dependent variable. Six of the 22 variables exhibited negative partial correlations and the remaining 16 variables showed low positive partial correlations. NEAT (is neat) showed the highest partial correlation, -.471, and was statistically significant beyond the .05 level.

Ancillary Questions

Pearson Product-Moment correlation coefficients were calculated to provide the information needed to answer Ancillary Questions 1 to 4. Correlation coefficients measure the amount and direction of linear association between two variables. Ancillary Questions 1 and 3 used a sample size of 36. It was necessary to exclude 12 of the original 48 participants from the data analysis because test scores were not available for them. Ancillary Questions 2 and 4 included all 48 participants.

Ancillary Question 1: Is there a relationship between the amount of time students spend working independently and students' academic ability level?

Tables 3.27 to 3.30 reveal the correlation coefficients obtained between certain variables. As can be seen in Table 3.27, the correlation of .421 between independent study time and academic ability level was statistically significant beyond the .05 level. This relationship indicates that the higher the academic ability

TABLE 3.27

CORRELATION COEFFICIENT FOR THE RELATIONSHIP BETWEEN THE AMOUNT OF TIME STUDENTS SPEND WORKING INDEPENDENTLY AND THEIR ACADEMIC ABILITY LEVEL

N	r
36	.421
	p = .011

levels of students, then the more time they spent working independently. Thus, Ancillary Question 1 was answered affirmatively.

Ancillary Question 2: Is there a relationship between the amount of students' off-task behavior time and the social maturity of students as measured by Self-Observation Scales (SOS)?

Table 3.28 shows the correlation between student off-task behavior time and their social maturity level. The correlation coefficient was not statistically significant. Thus, Ancillary Question 2 was answered in the negative.

TABLE 3.28

CORRELATION COEFFICIENT FOR THE RELATIONSHIP BETWEEN THE AMOUNT OF TIME STUDENTS ARE OFF-TASK AND THEIR SOCIAL MATURITY LEVEL

N	r
48	.002
	p = .992

Ancillary Question 3: Is there a relationship between students' on-task classroom behavior and students' affiliation with their teacher as measured by Self-Observation Scales (SOS)?

A negative correlation coefficient, -.171, was found between student on-task time and their affiliation with the teachers, as shown in Table 3.29. The correlation coefficient was not statistically significant. Thus, Ancillary Question 3 was answered in the negative.

TABLE 3.29

CORRELATION COEFFICIENT FOR THE RELATIONSHIP BETWEEN STUDENTS' ON-TASK TIME AND TEACHER AFFILIATION

N	r
48	-.171
	p = .246

Ancillary Question 4: Is there a relationship in the amount of process behavior permitted to students by their teachers and the students' academic ability levels?

Table 3.30 shows the correlation between student academic ability level and the amount of process behavior in which they engaged. The correlation coefficient, .215, was not statistically significant. Thus, this question also was answered in the negative.

TABLE 3.30

CORRELATION COEFFICIENT FOR THE RELATIONSHIP BETWEEN STUDENTS' PROCESS BEHAVIOR TIME AND THEIR ACADEMIC ABILITY LEVEL

N	r
36	.215
	p = .207

Summary

This chapter presented a discussion of the results of the statistical techniques that were used to analyze the data. Three techniques, t-test comparison between two means, multiple regression, and correlation analysis were used. The following chapter presents a summary of findings derived from the data analysis, conclusions drawn from the data analysis, and implications for practice and future research.

CHAPTER IV

SUMMARY AND CONCLUSIONS

This final chapter is composed of three sections. The first section contains a synopsis of the information presented in the first three chapters. The second section summarizes the findings and conclusions of the study. Section three delineates implications for practice and future research.

Summary of the Study

This research focused on the cognitive and affective development of children in relation to ability grouping practices and procedures used in classroom instruction in reading with emphasis on teacher instructional time allocation.

The study was designed to answer three questions: (1) What is the relationship between the academic ability level of students and the amount of teacher time allocated to them? (2) What is the relationship between the teacher's perception of students' social characteristics and students' academic ability group? (3) What is the relationship between students' self-concept and students' academic ability group?

The conceptual and theoretical background of the study were based on the literature dealing with ability grouping as it related to students' self-concept and teacher instructional time allocation.

Chapter I presented various views regarding ability grouping from major studies which were conducted to examine the effectiveness of grouping procedures in relationship to students' academic and social development. The literature review supported the fact that arguments for and against ability grouping practices continue despite the findings and conclusions derived from these studies. Several studies dealing with students' affective development have concluded that a child's self-concept influences his or her ability to learn and to relate to everyday life, and that a teacher's perception of a child plays a significant part in determining how the child feels about him/herself. Also, the first chapter provided some conclusions from studies dealing with how teacher allocation of instructional time is affected by students' academic ability level, as well as the importance of the amount and quality of instructional time which children receive from their teachers.

The study utilized six instruments for data collection. These instruments were used to gather information concerning students, teachers, and grouping procedures. Specifically, the instruments identified the criteria which teachers used for placing students in various reading groups, with an estimate of the percentage of instructional time allocated to various groups; information concerning the teachers' perception of their students' personal behavior; background information from students' personal files; self-concept scores which measured students' affective behavior in

terms of self-acceptance, self-security, social maturity, social confidence, school affiliation, teacher affiliation, and peer affiliation; information concerning teachers' and students' use of classroom instructional time; and students' level of academic progress. These instruments were used to obtain data for a sample of 48 students and 12 teachers in four Wisconsin school districts.

Answers to four major hypotheses and four ancillary questions were obtained through the use of comparisons of the difference between means, multiple regression analysis, and Pearson Product-Moment correlations.

Findings of the Study

This section delineates the major findings derived from the analysis of the data. Major findings for the hypotheses and ancillary questions are presented in three steps: (1) the results of the t tests used to test for statistically significant differences between mean scores of high and low reading groups using selected independent and dependent variables; (2) the results of the multiple regression analysis used to estimate the extent to which selected independent variables (social behavior characteristics or self-concept) accounted for a significant portion of the variance in the dependent variable (teacher instructional time); (3) the results of the Pearson Product-Moment correlations used to test for statistically significant relationships between independent and dependent

variables which were set forth in four ancillary questions. A significance level of .05 was established for all statistical tests.

Findings: T-Test Comparisons for Mean Differences

The major findings for Hypotheses 1, 3, and 4 follow:

Hypothesis 1: There is no significant difference in the amount of time students at different academic levels receive from their teachers.

Findings: A statistically significant difference was found between small-group instruction and group level. Examination of the mean scores of the low group and the high group indicated that a higher percentage of instructional time was spent with students who had been placed in the low group. A statistically significant difference also was found between the percentage of time spent in one-to-one instruction plus small-group instruction and group level. Comparison of the proportion of teacher time spent in one-to-one and small-group instruction revealed a mean of .2909 for the low group compared to the high's group mean of .2119. The hypothesis was rejected.

Hypothesis 3: There is no difference in the teacher's perception of a student's social characteristics across the ability groups in which the student is placed.

Finding: A statistically significant difference was found between group level and the following student social characteristics:

(a) pays attention in class

(b) has self-confidence

(c) demonstrates self-control

(d) gets along well with others

(e) has many friends

(f) is mature

(g) is cautious

(h) speaks clearly

(i) participates in class discussion.

The hypothesis was rejected for the above nine student behavioral patterns. The remaining six student behavioral patterns were not found to be statistically significant at the .05 level and therefore could not be rejected for this hypothesis.

Hypothesis 4: There is no difference in students' self-concept across different ability groupings.

Finding: No statistically significant difference was found between academic ability group and the following Self-Observation Scale (SOS) categories:

(a) Self-Acceptance

(b) Self-Security

(c) Social Maturity

(d) Social Confidence

(e) School Affiliation

(f) Teacher Affiliation

(g) Peer Affiliation

Therefore, the hypothesis could not be rejected.

Findings: Multiple Regression

Students' social characteristics and students' self-concept scores were regressed against time allocation as measured by time spent in small-group instruction and one-to-one plus small-group instruction. The hypothesis and findings were:

Hypothesis 2: There is no linear combination of students' social characteristics and students' self-concept which can account for a significant portion of the variance in amount of time allocated to students.

Findings: A total of 22 independent variables (15 social characteristics and 7 self-concept scores) were regressed against the dependent variable (time allocated to small-group instruction). Only one of these variables, NEAT (is neat), reached statistical significance at the .05 level. The F ratio for the equation was not significant at the .05 level. The hypothesis could not be rejected.

The 22 independent variables also were regressed against time allocated to one-to-one plus small-group instruction. Once again, the only variable to reach statistical significance at the .05 level was NEAT (is neat). The F ratio for the equation was not significant at the .05 level. Thus, the hypothesis could not be rejected. However, the variable NEAT (is neat) was statistically significant in each of the two equations.

Findings: Pearson Product-Moment Correlations

The major findings for the four ancillary questions were:

Ancillary Question 1: Is there a relationship between the amount of time students spend working independently and students' academic ability level?

Finding: The results revealed a statistically significant relationship between the amount of time students spend working independently and their academic level. The correlation coefficient, $r = .421$, indicated that as ability group placement increased, so did students' ability to work independently.

Ancillary Question 2: Is there a relationship between the amount of students' off-task behavior time and the social maturity of students as measured by Self-Observation Scales (SOS)?

Finding: The correlation coefficient, $r = .002$, indicated that no relationship existed between students' off-task behavior time and their level of social maturity.

Ancillary Question 3: Is there a relationship between students' on-task classroom behavior and students' affiliation with their teacher as measured by Self-Observation Scales (SOS)?

Finding: A negative relationship ($r = -.171$) was found to exist between students' on-task time and their affiliation with the teacher. The correlation was not statistically significant at the .05 level.

Ancillary Question 4: Is there a relationship in the amount of process behavior permitted to students by their teachers and the students' academic ability level?

Finding: No statistically significant relationship was found between process behavior and ability level. The correlation (.215) was not statistically significant at the .05 level.

Conclusions of the Study

A number of conclusions may be drawn based on the findings of the study. They are stated and discussed in this section.

Conclusion 1

A relationship existed between a student's academic group level and the amount of time teachers allocated to the student.

There was a statistically significant difference between students' academic group levels and the amount of instructional time students received from their teachers in a small-group setting. A statistically significant difference also was found between students' academic group levels and a combination of teacher instructional time in a one-to-one and in a small-group situation. Children of lesser ability or children who were placed in a lower academic ability group received more instructional time from their teachers.

This finding raises a number of questions; among them are: How helpful was the instructional time to the low group? Will the greater amount of teacher time affect students' academic achievement, thereby eventually resulting in a higher group assignment? Are students in the high group mentally and socially mature enough to continue working with less direct teacher supervision? What does a student in the high group do when faced with a word or sentence that he or she doesn't understand--wait for the teacher to finish with the low group and then help him or her, or skip over that word or sentence and continue working? How do students in the low group feel about the fact that they are not permitted to work alone as much as students in the high group? Does group placement have a lasting effect, either negative or positive? What percentage of students is not assigned to the proper academic group?

Partial answers to these questions might be found in many of the research studies concerned with ability grouping as reviewed in Chapter I and again referred to in this section of the study. Keliher (1939) asserted that homogeneous grouping is not advantageous for elementary school students, and 40 years later Johnson (1970) reported that ability grouping promotes racial and class prejudice and that lower-class children are most often placed in lower-ability tracks, regardless of their actual ability. Studies conducted prior to 1955, as summarized by Goodlad (1960), indicated that slow learners benefit more from grouping than fast learners.

Daniels (1961), on the other hand, stated that grouping hinders slow, average, and fast students' educational progress.

The findings of the present study contrast with those of other studies (Garner, 1978; Good, 1970; Kranz et al., 1970; Tyo & Kranz, 1973) which indicated that students of high ability received more interaction from teachers than did students of low ability. The quality of teacher-student interaction may be more important than the quantity of time a teacher devotes to a student. Carroll (1963) suggested that the quality of instruction and students' ability to understand the instruction are important factors.

Conclusion 2

Students' social characteristics appear to influence their placement in an academic group.

Teachers were given 15 student behavioral patterns (Appendix B) and were asked to rank their students' behavior on a scale from 1 (strongly agree) to 4 (strongly disagree). There were nine statistically significant differences between students' academic group level and students' social characteristics. Nine of the 15 behavioral patterns were statistically significant. It is noteworthy that students in the high group received a more favorable overall mean score than low-group students for each of the 15 behavioral patterns. Teachers perceived that children who had been placed in the high-ability group were more likely to pay attention in class, get along well with others, have many friends, be mature,

be cautious, speak clearly, and participate in class discussion. These findings agree with those of Lewis (1971) who reported that low-achieving students received less favorable behavior ratings from teachers than did high-achieving students.

Conclusion 3

Students' self-concepts were not related to their placement in an academic group.

No statistically significant difference was found between students' academic group and their self-concept as measured by the Self-Observation Scales. This finding is quite startling and contrasts with the findings of previous studies. Peck et al. (1977) stated that the child's ability to achieve is related to his or her self-concept. Garrell (1975) indicated that school environment strongly influences a child's self-concept. Borg (1966) reported that the self-concept of slow and average students suffered in schools where ability grouping was practiced.

It is noteworthy that, in terms of social behavior, teachers perceived students in the high academic group more favorably than they did students in the low academic group. However, the mean self-concept scores for low- and high-group students indicated that all students viewed themselves positively, regardless of their group assignment. One possible explanation for this finding might be that the greater quantity of time which teachers spent with low-group students influenced the students' self-concept in a positive manner.

A second possible explanation for this finding may be that parents generally show a very positive attitude toward their children (regardless of the child's academic ability group level), which may strongly influence the child's self-concept at the third grade level. A third explanation for this finding might lie in positive dispositions displayed by people in the child's environment outside the school.

Conclusion 4

"Neatness" was an important aspect of social behavior as perceived by teachers.

"Is neat" was the only student behavior variable which correlated significantly with teacher instructional time allocation to small-group situations in the regression analysis. The relationship between "is neat" and time allocated to small-group instruction was negative. That is, the students with whom teachers spent more time in a small group were less likely to be described by the teacher as being "neat."

In the regression of the students' social characteristics and self-concept against the combination of time allocated to one-to-one and small-group instruction revealed that once again "neatness" was the only variable which correlated significantly with teacher instructional time allocation. Again, "is neat," showed a negative relationship to teacher time allocated. That is, as the amount of allocated teacher time increased, students' neatness

decreased. This finding is in contrast with those in a study conducted by Rist (1970), who reported that neater children received more time from their teacher.

Conclusion 5

Students in the high-ability group spent more time working independently than did those in the low-ability group.

There was a statistically significant relationship between the amount of time students spent working independently and their academic ability level. A positive correlation revealed that the higher the students' grade level, the more time they spent working independently. This finding comports with that reported by Good and Beckerman (1978), who found that high achievers were more involved--spent more time on task--than low achievers.

Conclusion 6

The manner in which students conducted themselves in social situations was unrelated to the amount of time they spent in off-task behavior.

No statistically significant relationship was found between the amount of time students were off-task and students' social maturity level.

Conclusion 7

The amount of time students spend in process behavior, e.g., waiting to get directions or waiting for the teacher to answer a

question, was unrelated to a student's ability group placement.

No statistically significant relationship was found between the amount of time students were involved in process behavior and students' academic ability level. This finding is not surprising since all students were expected to raise their hands and wait to be called on, sharpen their pencils, etc.

At the outset of this study, it was assumed that a number of factors influence how teachers use their time and how students are assigned to ability groups. It was also assumed that students' social behavior (as perceived by the teacher) and the ways students perceived themselves (self-concept) influenced the allocation of teacher time. It was further assumed that both student social behavior and self-concept affected their ability group assignment. Results of the data analysis revealed that academic group level does, in fact, influence teacher time allocation. That is, students assigned to the low group received more teacher instructional time than did students who were assigned to the high group. Over half of the 15 descriptors of students' social behavior were found to be related to ability group assignment, but none of the seven self-concept areas were found to affect students' grouping assignments. However, it should be noted that when the combined social behavior and self-concept variables were regressed against teacher time,

only one variable--NEAT (is neat) showed a statistically significant relationship to teacher time allocation.

The ancillary questions probed student variables in relation to the students' time allocation. The relationship between students' independent work time and their academic ability level produced a statistically significant positive relationship. No relationship was found between students' off-task time and their social maturity level. A modest, but not statistically significant, negative relationship was found between students' on-task time and teacher affiliation. No statistically significant relationship was found between the time students spent in process behavior and their academic ability level.

As was stated, this study was designed to answer three basic questions. The three questions are restated here along with statistical evidence which affirms or denies them.

Question 1: What is the relationship between the academic ability levels of students and the amount of teacher time allocated to them?

Reply: A statistically significant relationship at the .01 level was found between academic ability levels and teacher time allocated in a small-group setting, as well as between academic ability levels and teacher time allocated in a one-to-one situation and small-group setting.

Students in the low-ability group received more teacher time than those in the high-ability group.

Question 2: What is the relationship between the teacher's perception of students' social characteristics and students' academic ability group?

Reply: A statistically significant relationship was found between 9 of the 15 student behavioral patterns and students' academic ability group? The nine patterns and their level of statistical significance follow:

(a) pays attention in class	(.03 level)
(b) has self-confidence	(.03 level)
(c) demonstrates self-control	(.02 level)
(d) gets along well with others	(.01 level)
(e) has many friends	(.01 level)
(f) is mature	(.01 level)
(g) is cautious	(.03 level)
(h) speaks clearly	(.01 level)
(i) participates in class discussion	(.001 level)

Question 3: What is the relationship between students' self-concept and students' academic ability group?

Reply: No statistically significant relationship was found between students' self-concept and students' academic ability group. It is noteworthy, however, that according to mean scores both low- and high-group students tended to view themselves positively.

Implications of the Study

This study answered some questions and raised many others. This section identifies some implications for practice which are suggested by the results of the study, as well as presenting some implications for further research.

Implications for Practice

As revealed in this study, ability grouping practices hold implications for teacher time allocation. The data indicated that the low-ability group received more of the teacher's time in one-to-one and small-group situations than did the high-ability group. To provide a balanced program of instruction, the following recommendations may be useful to classroom teachers in schools that seek to individualize instruction:

1. Involve the entire class in the discussion, application, and practice of reading, mathematics and other skills, making sure that various levels of materials are available.

2. Use peer tutoring--have students in the high group help students in the low group. Provide materials whereby students in the high group can explain and help students in the low group.
3. Individualize the program; have each student evaluated and assigned to materials appropriate to his or her level; have the teacher and/or teacher aide provide help to each individual child.

It is noteworthy that students of low ability may require more direct time from teachers. Classroom teachers who devote additional time to the low ability group students should not feel guilty. However, members of the high-ability group must also be provided sufficient direct instructional time. Although members of this group may be intellectually able, they may need motivation or specific help from the teacher.

The results of this study prompts such questions as: If children of lesser academic ability receive more teacher instructional time, will they generally remain in the low group or will their achievement level increase, thereby resulting in their placement in a higher group? It may warrant probing differences in the quality of instruction as well as in the quantity of time. Twenty minutes of time spent wisely might prove to be more valuable than 40 minutes of time spent on material which students are not motivated to understand, where the group is noisy and disruptive, and where the word "success" is unheard of.

The social behavior of students was an area where teachers' rankings favored students in the high group. Although students who are low achievers vary in their classroom behavior (Brophy & Good, 1974), teachers must learn to cope with these students. Some recommendations follow.

1. Hold all students accountable for the results of their efforts; set realistic goals and expectations for each instructional group.
2. During class discussions, call on low-ability students as well as high-ability students.
   (a) When low-ability students make public responses, give them immediate positive feedback whenever possible.
   (b) Attach equal importance to responses from all students.
3. Help low-ability students to evaluate their own work and determine how they can improve.
4. Involve the school counselor in providing affective activities dealing with acceptable and unacceptable behavior.
5. Involve all students in discussions to delineate and agree upon classroom rules and regulations and procedures for enforcing them.

6. Provide enough flexibility in classroom activities so that if major problems arise, they can be dealt with immediately.
7. Use simple, direct forms of praise.

The results of this study indicated that as students' academic ability level increased so did the amount of time they spent working independently. Motivation of the high-ability group may be a key issue here. Providing interesting work that attracts the interest of low-achieving students and captures their interest may prove beneficial. Some suggestions follow.

1. Establish learning centers where children may work independently after they have completed their regular assignments.
2. Allow an appropriate amount of time to complete an assignment--expect all children to work diligently toward completing the assignment.

The results of this study indicated that the amount of time students spent on-task tended to be inversely related to teacher affiliation as measured by the Self-Observation Scales. Becoming acquainted with students is important, but this finding suggests there may be a need for caution in establishing this relationship. Friendliness is desirable in the classroom but should not take the place of classroom discipline. Teachers must learn to know their students individually and still maintain a high level of expectation

for students. Teachers must know when and how to use praise and criticism in the classroom, because praise and criticism used incorrectly may create a negative, angry attitude in children, thereby causing them to give up or rebel. Teachers should not expect less from a student simply because the student has lower academic ability, is shy, or is quiet.

Implications for Future Research

Researchers and practitioners alike need to examine some of the assumptions that underlie ability grouping as it relates to teacher time allocation, student social behavior, and student self-concept. Research studies concerned with these areas were discussed in Chapter 1 and were mentioned again in this chapter to aid in the identification of implications for further study.

One of the basic assumptions which should be examined further is that schools which attempt to individualize instruction attend more adequately to the needs of low-ability students. Previous research that has attempted to examine how children are affected by academic ability grouping has produced conflicting results and contrasting conclusions. For example, ability grouping hinders slow learners (Dockrell, 1964); has no consistent effect on student achievement (Goldberg et al., 1966; Wilcox, 1961); attracts lower-class children (Johnson, 1970); places students in the wrong group (Yates, 1966); helps slow learners (Goodlad, 1960); perpetuates growth in rapid learners which is offset by losses in slow learners

(Borg, 1966; Heathers, 1967); creates "caste systems" which may perpetuate elitism (Good & Brophy, 1973); and causes inflexibility by not allowing students to change group assignments (Daniels, 1961).

In regard to the low group receiving more teacher allocated time, it would be beneficial for teachers to know whether the quality of instruction can offset a lesser amount of time. Research in this area has attempted to examine the relationship between academic ability grouping and teacher-student interaction, teacher time allocation and student achievement, and teacher time allocation and student time on-task. For example, Good (1970), Kranz et al. (1970), Medinnus and Unruh (1971), and Rubovitz and Maehr (1971) asserted that high achievers are given more opportunity to respond in class and receive more positive feedback from teachers than low achievers. Rossmiller (1978) found that the amount of instructional time allocated to students in 28 IGE elementary schools accounted for only 44 percent of the variance in school achievement. Kiesling (1972) reported that instruction by a trained specialist correlated positively with reading gains in the third grade. Gump (1967) reported that teachers of third graders allocated 12 percent of the class time for pupil movement in and out of class. Grannis (1978) asserted that 9 to 13 percent of teacher allocated class time was used for nonrelated subject matter (environmental maintenance). On the basis of this evidence it is recommended that researchers need to address the following questions:

1. What is the relationship between the quality of teacher allocated time and student progress?
2. Does the relationship between the quality of teacher allocated time and student progress affect the amount of time teachers spend planning learning activities for the low and high groups?
3. Is the relationship between the quality of teacher allocated time and student progress linear, curvilinear, or mixed?

The kinds of student social behavioral patterns (as perceived by teachers) that affect student group placement warrants further research. Research has indicated (Brown & MacDougall, 1971) that when teachers judge students' ability to learn, the students' social behavior plays a more significant role than his or her intellectual potential.

It is startling, however, that a child's "neatness" was inversely related to allocated teacher time in the present study. Students who were "less neat" received more teacher time than students who were "neater." This striking finding contrasts with previous research done by Rist (1970), who found that body cleanliness, hair style, and type of apparel positively influenced teacher-student interaction. These conclusions indicate a need to address the question of the role that a student's social behavior plays in shaping ability group placement decisions.

The effects of ability grouping on students' self-concept is worthy of further research. This study found that a student's self-concept was unrelated to his or her group placement. This study was limited to third graders and it is possible that third graders may not yet have had their self-concept destroyed. Researchers in this area have generally concluded that a student's self-concept influences his or her ability to learn (Brookover et al., 1962, 1965, 1967; Bledsoe, 1967; Peck et al., 1977). These findings prompt several questions which merit further research:

1. Do schools which attempt to individualize instruction have a more positive influence on students' self-concept than schools which do not?
2. Does the number of years a child has attended school positively or negatively affect his or her self-concept?

Students' academic ability levels are related to their ability to engage in independent work time. Perkins (1965) found that high-ability children who were labeled as underachievers spent more classroom time engaging in nonacademic work than children who had been labeled as achievers. Lahaderne (1968) reported a positive relationship between students' attention and academic and intelligence test scores. This evidence suggests the following questions for further study:

1. Do teachers spend a greater amount of time motivating students from the high group than students from the low group?

2. Does the amount of student motivation vary with the type of classroom material, students' level of understanding, teachers' ability to stimulate students' intellectual curiosity, students' attention span, classroom atmosphere, or teachers' affiliation with students?

This study did not involve middle school, junior high, or senior high school students and teachers. Studies of these levels are needed to provide additional information about ability grouping, teacher time allocation, and changes in students' self-concept and social behavior as they progress from one grade to the next. The criteria actually used in determining the placement of students into various groups or tracks deserve some attention, since grouping procedures are used in elementary, middle school, junior high, and high school (Tuckman & Bierman, 1971).

In conclusion, it is this author's hope that this study will help classroom teachers to understand better how ability grouping may influence instructional time allocation, teacher perceptions of students' social behavior, and students' self-concept so that the cognitive and affective development of children will be enhanced.

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APPENDIX A

TEACHER INTERVIEW

Teacher Interview

1. First, I am interested in whether you group students and if you do, how you go about grouping students in your class.

   Do you form instructional groups? _____

   1a. What subjects do you form instructional groups? _____

   _____

2. Do you group students for reading? _____

   2a. How many groups do you have for reading? _____

   2b. What is the approximate size of each of your group(s) according to the following:

   Reading

   2-5 students
   6-10 students
   11 and over

   2c. Describe the criteria you use for determining your reading groups--such as

   a. Achievement test scores
   b. IQ test scores
   c. Teacher ratings or teachers' judgment of pupils' ability
   d. Social and emotional maturity of students
   e. Motor coordination of students
   f. Oral reading ability of students
   g. Range of achievement level within group

2d. How frequently do you regroup in reading? _____

In this section of the questionnaire I am interested in your opinion about your class and your school's curriculum. There are no right or wrong answers.

3. Considering the amount of effort which students in your class put forth in school, how would you rate their efforts?

- ☐ Lot of effort
- ☐ Average amount of effort
- ☐ Little effort

4. Would you prefer to teach in another school, rather than in this school?

- ☐ Yes
- ☐ No

5. Which of the following groups would you prefer to teach?

- ☐ High ability group
- ☐ Average ability group
- ☐ Low ability group
- ☐ Mixed ability group
- ☐ No preference

6. How would you rate the overall academic ability level of your class?

- ☐ High
- ☐ Average
- ☐ Low

7. Usually the school curriculum is designed in such a way that most students can master it in a reasonable amount of time. Some students accomplish the task of mastering the curriculum while other students do not. Approximately what percentage of your students do you expect to completely master the curriculum?

_____% students completely master curriculum.

8. Approximately what percentage of your instructional time is spent instructing the class as a whole, subgroups in the class, or particular individuals?

_____% particular individuals

_____% subgroups

_____% whole class

100% Total

9. When you are holding a group discussion, what percentage of the time do you spend calling on students who raise their hands, calling on students in a particular order, such as alphabetically

or by seat arrangement, and calling on students at random who do not raise their hands?

_____% Calling on students who raise their hands

_____% Calling on students in a particular order, such as alphabetically, seat arrangement, etc.

_____% Calling on students who do not raise their hands

100% Total

10. Many teachers direct their level of instruction to the academically high, average, or low students when teaching a lesson for the whole class. Toward which group do you direct your instruction?

☐ High

☐ Average

☐ Low

APPENDIX B

TEACHER QUESTIONNAIRE

Teacher Questionnaire

I am interested in your perception of various students in your class. Following is a list of statements which describe a student's personal behavior. To what extent do you agree or disagree with each of the statements?

1. Strongly Agree
2. Agree
3. Disagree
4. Strongly Disagree

For example, if you strongly agree with a statement, place the number 1 in the box beside the child's name; if you strongly disagree, place the number 4 in the box.

Please place the appropriate number in each row below, across from each student's name. Again, there are no right or wrong answers.

Student's Name	Pays attention in class	Has self confidence	Demonstrates self-control	Gets along well with others	Is creative and imaginative	Exhibits leadership	Has many friends	Works hard
	1	2	3	4	5	6	7	8

Student's Name	Is mature	Is cautious	Is neat	Speaks clearly	Helps other children	Is obedient	Participates in class discussion
	9	10	11	12	13	14	15

End of questionnaire. Thank you.

APPENDIX C

STUDENT RECORD DATA SHEET

Student Number _____

Data Collector _____

STUDENT RECORD DATA SHEET

1. Name _____ 2. Birthdate ____ ____ ____

3. Parents' Names _____

4. Address _____
(Street, Box, or RR Number)

_____ _____ 5. Phone No. _____
(City) (State) (Zip)

6. Handedness R L 7. Age in months at Sept. 1, 1979 _____

8. Sex _____ 9. Grade on Sept. 1, 1979 _____

10. Racial/national origin _____

11. Pre-school enrollment _____

12. Enrollment in other schools _____

13. Handicaps or special needs _____

14. Special program enrollment (include dates) _____

_____

_____

_____

15. Homeroom teacher (include grade)
Third Grade _____
Fourth Grade _____
Fifth Grade _____

16. Aptitude, achievement, intelligence, psychological, etc. test scores taken prior to start of study (specify test, age at testing, scores, initials)

_____

_____

_____

_____

17. Attendance Data:

	Grade					
	First	Second	Third	Fourth	Fifth	Sixth
Days present	_____	_____	_____	_____	_____	_____
Days absent	_____	_____	_____	_____	_____	_____
Days tardy	_____	_____	_____	_____	_____	_____

18. Outcome test scores. Specify test, scores, subscores, date of administration, percentiles, raw scores, grade equivalency, and any other pertinent information. Please initial.

Reading Achievement

Third Grade _____

_____

_____

Fourth Grade _____

_____

_____

Fifth Grade _____

_____

_____

Mathematics Achievement

Third Grade _____

_____

Fourth Grade _____

_____

Fifth Grade _____

_____

19. Self-Observation scores:

	Third	Fourth	Fifth
Self-Acceptance			
Security			
Social Maturity			
Social Confidence			
School Affiliation			
Teacher Affiliation			
Peer Affiliation			

20. Other Outcome Measures _____

_____

_____

_____

21. Grades or Progress Reports _____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

APPENDIX D

SELF-OBSERVATION SCALES

REFERENCE

Katzenmeyer, W. G., & Stenner, A. D. Self-Observation Scales, Intermediate Level. Durham, North Carolina: National Testing Service, Inc., 1974.

DESCRIPTION OF SOS SCALES

Scale I -- Self Acceptance

Children with high scores view themselves positively and attribute to themselves qualities of happiness, importance, and general competence. They see themselves as being valued by peers, family, and teachers. Children with low scores see themselves as unhappy, lacking in general competence and of little importance to others. Three items highly related to this scale are: I am a good person; I am a happy person; I am fun to be with.

Scale II -- Self Security

Children with high scores report a high level of emotional confidence or stability. They feel that they are in reasonable control of the factors that affect their lives and spend little time worrying over possible troubles. Children with low scores on this scale worry a great deal. They are concerned that something bad may happen and report feelings of nervousness. Three items highly related to this scale are: I worry quite a bit over possible troubles; I am a very nervous person; I often feel angry for no special reason.

Scale III -- Social Maturity

Children with high scores on this scale know how they are supposed to think and feel in a variety of social situations. They have learned the importance of such notions as "fair play," "sharing," "perseverance," "helpfulness," and "generosity." Children with low scores on this scale have not learned these notions and are likely to evidence behaviors that most adults would characterize as selfish, inconsiderate, or immature. Three items highly related to this scale are: I like to play only when I am the leader; I always have to be boss; I like to see other children happy.

Scale IV -- Social Confidence

Children with high scores on this scale feel confident of their ability to relate successfully in social situations. They feel confident that they can make friends easily, and that they are valued and enjoyed by their friends. Children with low scores have difficulty making friends, do not feel valued by others and see other people as being more socially adept than themselves. Three items highly related to this scale are: People are always picking on me; Other children are often mean to me; My classmates like me.

Scale V -- School Affiliation

Children with high scores view school as a positive influence in their lives. They enjoy going to school, and they enjoy the activities associated with school. Children with low scores view school as an unhappy place to be. They do not enjoy most school-related activities and are negative about the importance of school in their lives. Three items highly related to this scale are: I like to stay home from school; Each morning I look forward to coming to school; I feel good when I am at school.

Scale VI -- Teacher Affiliation

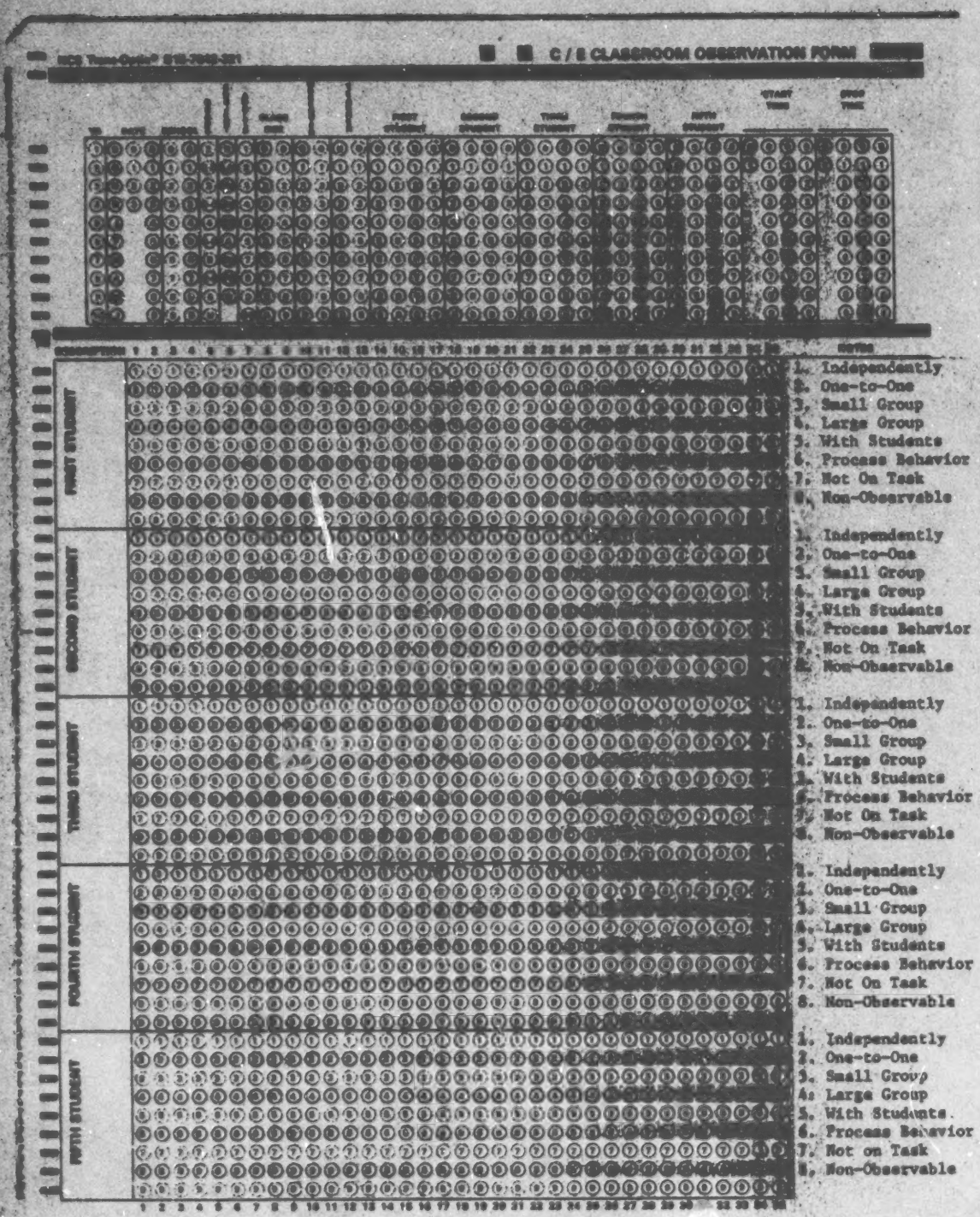
Children with high scores on this scale like their teachers. They see the teacher as helpful, attentive, understanding, and generous. Children with low scores see the teacher as arbitrary, inconsiderate of children, and/or as a source of emotional pain. Three items highly related to this scale are: I like my teachers; My teachers like to help me; My teachers are mean.

Scale VII -- Peer Affiliation

Children with high scores on this scale consider their relationships with other children to be both of high quality and of considerable importance to them. They see themselves as approved of and valued by their peers. They like to be with other children. Children with low scores do not see their peer relationships as an asset. They see other children as unfriendly, they have few friends, and do not accept the responsibilities of friendship easily. Three items highly related to this scale are: I don't have many friends; The other children in my class are not friendly toward me; I don't like most of the children in my class.

APPENDIX E

CLASSROOM OBSERVATION FORM


C / S CLASSROOM OBSERVATION FORM
FIRST STUDENT
SECOND STUDENT
THIRD STUDENT
FOURTH STUDENT
FIFTH STUDENT
CODES
1. Independently
2. One-to-One
3. Small Group
4. Large Group
5. With Students
6. Process Behavior
7. Not On Task
8. Non-Observable

APPENDIX F

COMPREHENSIVE TESTS OF BASIC SKILLS

REFERENCE

Comprehensive Tests of Basic Skills, Level B, Form S. CTB/McGraw-Hill, Del Monte Research Park, Monterey, California, 1974.

APPENDIX G

STANFORD ACHIEVEMENT TEST

REFERENCE

Stanford Achievement Test Primary 1 Level A.

Primary II Form A.

Stanford Achievement Test Primary Level III Form A.

Harcourt Brace Jovanovich, Inc., New York, 1972.

APPENDIX H

CALIFORNIA ACHIEVEMENT TEST

REFERENCE

California Achievement Test. CTB/McGraw-Hill, Del Monte Research Park, Monterey, California, 1977.

APPENDIX I

PARENTAL CONSENT FORM

Student Name: _____

Wisconsin Research and Development Center
for Individualized Schooling

SCHOOL RESOURCE UTILIZATION STUDY

Parental Consent Form

The study in which you and your child are invited and requested to participate is designed to examine the ways in which a variety of resources, such as money and time, are used in the educational process and how various resources affect the progress of individual students. The study will cover a three-year time period. Students who are in the third grade during the 1979-80 school year will be the focus of the study, which will be completed during your child's fifth grade year. In conducting the study, the researchers will observe students in school, review pertinent school records, and interview selected teachers and parents.

All participants will remain anonymous, and no individual or school will be identified in any reports of the research.

Any questions you may have concerning the procedures to be used in the study will be answered. You are free to withdraw your consent and discontinue participation in the study at any time.

Please sign below to indicate your consent to participate in the study and return this form in the enclosed envelope. Thank you for your willingness to participate.

_____ _____

Parent or Guardian Date

APPENDIX J

STAFF CONSENT FORM

School Name _____

RESOURCE UTILIZATION STUDY

Staff Consent Form

The research in which you are asked to participate is designed to study the ways in which a variety of resources are used in the educational process and how they affect individual students. The study will cover a three-year time period beginning with the 1979-80 school year. In conducting the study, the researchers will observe students in school, analyze pertinent school documents, and interview selected teachers, parents, and administrators.

All participants will remain anonymous, and no individuals or school will be identified in any reports of the research.

Any questions you may have concerning the procedures to be used in the study will be answered. You are free to withdraw your consent and discontinue participation in the study at any time.

Please sign below to indicate your consent to participate in the study. Thank you.

_____ _____

Name Date

APPENDIX K

GLOSSARY OF VARIABLES AVAILABLE FOR USE IN THE STUDY

GLOSSARY OF VARIABLES AVAILABLE FOR USE IN THE STUDY

Students' Social Characteristics Variables

PATEN
Pays attention in class

SLFCONF
Has self-confidence

SLFCNTRL
Demonstrates self-control

GTALONG
Gets along well with others

CREATE
Is creative and imaginative

LEADER
Exhibits leadership

FRIENDS
Has many friends

WORKS
Works hard

MATURE
Is mature

CAUTIOUS
Is cautious

NEAT
Is neat

SPKLEAR
Speaks clearly

HELPOTHR
Helps other children

OBEDIENT
Is obedient

CLSDCUSS
Participates in class discussion

Self-Observation Scales (SOS) Variables

SLFXEPT
Self-acceptance

SLFSECR
Self-security

SOCLMAT
Social maturity

SOCLCONF
Social confidence

SKULAFIL
School affiliation

TCHRAFIL
Teacher affiliation

PEERAFIL
Peer affiliation

Center Planning and Policy Committee

Richard A. Rossmiller
Center Director

Dale D. Johnson
Area Chairperson
Studies in Language:
Reading and Communication

Marvin J. Fruth
Area Chairperson
Studies in Implementation
of Individualized Schooling

Penelope L. Peterson
Area Chairperson
Studies of Instructional Programming
for the Individual Student

James M. Lipham
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Organization for Instruction

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Curriculum and Instruction

Gary G. Price
Assistant Professor
Curriculum and Instruction

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Professor
Curriculum and Instruction

Richard A. Rossmiller
Professor
Educational Administration

Peter A. Schreiber
Associate Professor
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B. Robert Tabachnick
Professor
Curriculum and Instruction

Gary G. Wehlage
Professor
Curriculum and Instruction

Louise Cherry Wilkinson
Associate Professor
Educational Psychology

Steven R. Yussen
Professor
Educational Psychology

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